

# THE IRON AGE

THURSDAY, MAY 24, 1888.

## Wright's Gas Generator and Injector Burner.

Messrs. Williams & Wright, of the Hydro-Carbon Fuel Company, of Troy, N. Y., are putting on the market a gas generator and an injector burner of Mr.

for starting the apparatus, after which the connections are closed, the water allowed to run out of apparatus, and the gaseous fuel generated. The oil and steam are fed to the generator by a special injector valve, which throws them into the retorts in a thoroughly mixed condition, the oil being finely divided, and in con-

scale deposited by impure water or the heavier oils. The apparatus can be applied to any of the present styles of boilers and gas conducted to boilers or furnaces located in other parts of the works.

Of the burner we present a sectional perspective in Fig. 1. It is claimed by the makers to be adapted to atomizing

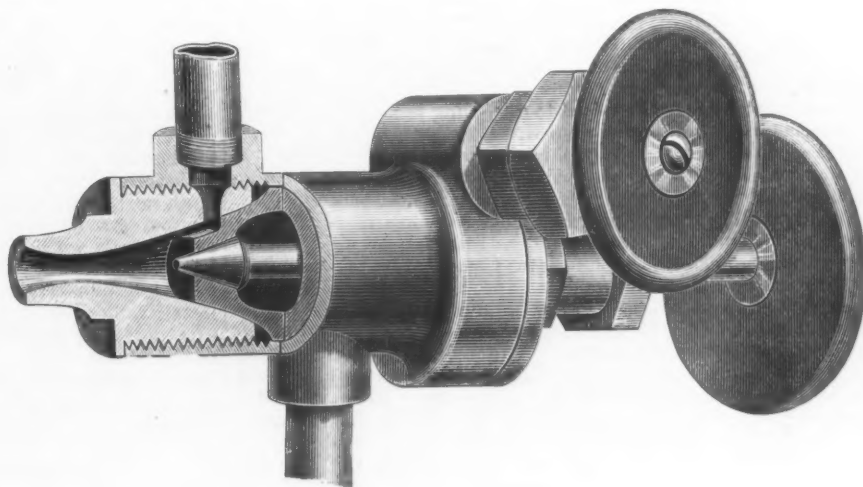


Fig. 1.—Sectional Perspective of Injector Burner.

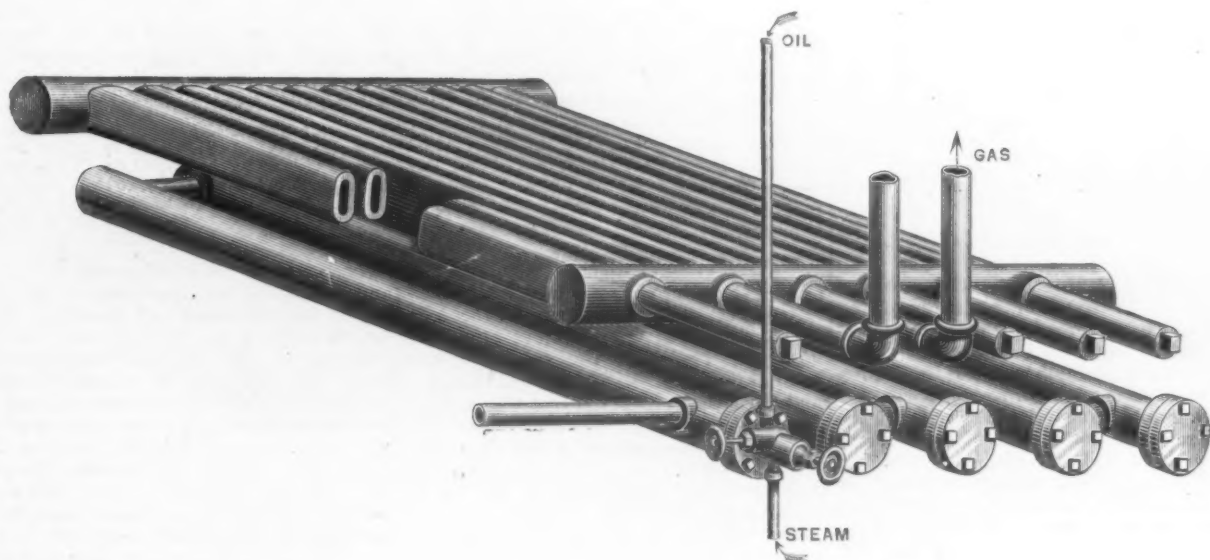


Fig. 2.—Gas Generator.

GAS GENERATOR AND INJECTOR BURNER, MADE BY MESSRS. WILLIAMS & WRIGHT, TROY, N. Y.

Wright's designs, the engravings on this page illustrating the construction.

The gas generator shown in Fig. 2 consists of five retorts, and a system of grates above the retorts. The grates are designed to take the place of the ordinary grate bars, which are removed. The lower left-hand retort is connected by the pipe shown broken off to the water space, or lower portion of the boiler, and the upright pipe connects with the steam space, thus converting the grate of the gas generator, while these connections are open, into a water grate on which a fire may be made with wood or coal and steam generated

dition to become either a fixed gas or vapor, depending on the size of apparatus and the heat at which it is maintained. The gas issues from the apparatus as indicated by the arrow marked "Gas," and may be conducted to furnaces or other boilers where it is to be consumed through suitable pipes controlled by valves at the places of combustion. The amount of gas generated is regulated entirely by the special injector valve referred to above. The flame produced, we are told, is white, smokeless, and of intense heat. All parts of the generator are easily accessible for cleaning and blowing out any sediment or

and burning any oil, from the lightest to the tarry residuum, without clogging the oil, not being fed through an annular space. The construction adopted is clearly shown in our engraving. The burner is easily applied, and is carefully made of the best materials.

An examination of electrical railroad statistics shows that there are 130 miles of road in operation on this continent. Of this number of miles 21 miles are in operation in the State of Pennsylvania, 16 miles in the State of New York, 10 in Ohio and 83 miles in other States. Almost all of

this building has been done in the past year. On these various roads, constructed and constructing, in 62 different towns and cities the Van Doepoele system is used or to be used in 17 cases, the Daft system in 15 cases, the Sprague system in 7 cases, and the Bentley-Knight, the Heart, the Henry, the Julien and other systems in the remaining cases. The last-named system is to be used on the projected New York and Harlem Fourth Avenue Electrical Railroad.

#### The Direct Process of the Carbon Iron Company.—I.

The Carbon Iron Company, of which C. M. Raymond is president, F. B. Robinson, vice-president; John D. Slayback, treasurer; Wm. Brandreth, secretary, and Andrew Dickey, general manager, has for upward of a year experimented with a direct process for the manufacture of iron from the ore. Some time since they purchased the old Graff property, at Pittsburgh, and have since begun the erection of an open-hearth steel plant, with a large universal mill. It differs from the numerous other direct processes thus far elaborately experimented with and almost invariably condemned, in that graphite is used as a reducing agent instead of the ordinary forms of carbon. As a cheap and efficient substitute for the plumbago of commerce the Carbon Iron Company use a graphite substance occurring at Cranston, near Providence, R. I., which contains 78 per cent. of graphite carbon, 15.06 per cent. of silica, 2.60 per cent. of volatile matter and 0.045 per cent. of phosphorus. The principal claim made in behalf of this modification of the ordinary direct processes is that the reducing agent does not burn out rapidly, but that a considerable quantity remains with the sponge produced, protecting it against the excessive reoxidation of the metallic iron produced during the subsequent stages of treatment. It has been this reoxidation during balling, shingling or squaring and subsequent rolling into muck bar or immersion into an open-hearth bath which has caused the losses wrecking the Siemens and other direct processes.

#### THE PROCESS.

Mr. Alfred E. Hunt, of Pittsburgh, has embodied the results of his study of the process in a paper read at the Boston meeting of the American Institute of Mining Engineers, from which we quote the following description of the process proper:

The graphitic material is mixed with the iron ore, both ground so as to pass through a sieve of 16 meshes to the inch, and mixed with water so that the mass will mold in the hand easily, and in the proportion of 2240 pounds of dry ore to 550 pounds of the graphite, placed upon a large flat furnace hearth of about 6 x 22 feet, with the stack in the center of the furnace. The furnace has, for a bottom, simply a layer of 8 inches of graphite upon the brickwork. The charge of steel mixed ore and graphite is spread over the furnace bottom to the depth of about 4 inches, the doors of the furnace are well luted against ingress of air, and a reducing flame of natural gas is allowed to play over the charge from natural gas gets at both ends of the furnace. In 20 minutes' time the charge has sunk to one-half its thickness on the bed of graphite, and the blue flames of carbonic oxide gas are seen coming up all over it, the temperature of the furnace being somewhere in the neighborhood of 1000° F.

At the expiration of an hour the charge has sunk to one-third of its former thickness, and beads of metallic iron are seen all over the surface. The heat is still kept

with the reducing flame upon the furnace for another half hour, when the workmen, with ordinary puddlers' hooks, commence the operation of balling up. The reduced iron rolls up like snowballs in the furnace, and is easily made up in lots of 100 to 150 pounds. Each furnace will produce, using the Minnesota "Y" ore with 62 per cent. metallic iron, from 12 to 15 of these balls according to the size in which they are made up. The heat at no time during the operation has been at all high, the furnace hearth only getting to an orange colored heat, or probably 1500° F. toward the last of the operation, before the balling up commences; and this orange colored heat is more the reflection of the reduced ore on the melted slag than it is the intense heat of the brickwork and lining of the furnace. At no time in the production of the sponge for open-hearth stock is the heat raised to a sufficient degree to melt cast iron. The heat, however, is required to be raised to a welding heat if the balls are to be welded.

The chimney is kept well dampered down during the entire work, as a reducing flame is required for the success of the operation. This reducing flame is easily obtained in the furnaces, as used by the Carbon Iron Company, with a 1½-inch natural-gas pipe leading to a fire-box at each end of the furnace. The natural gas being under a pressure sometimes as low as 4 ounces. The reducing furnaces have several times been run successfully when the natural gas pressure was so low that the puddling furnaces in the adjacent mills have been obliged to shut down. All the balls are made up, in the ordinary practice, before any of them are withdrawn from the furnace. After all the balls are ready, which usually takes about 30 minutes' time, they are withdrawn and squeezed in an ordinary rotary squeezer, and rolled into ordinary muck bars or blooms, or taken to a hammer and forged into blooms, or preferably, taken hot to the back of an open-hearth furnace. The time taken for the entire operation is about two and one-half hours if the balls are to be used in an open-hearth furnace, or three hours if taken to the rolls. For open-hearth work each furnace will deliver eight heats for 24 hours, or sponge balls for a weight of 1550 pounds of balls per heat.

#### RAW MATERIAL FOR OPEN-HEARTH STEEL.

As a stock for the manufacture of open-hearth steel the sponge balls produced by the Carbon Iron Company are peculiarly adapted. They give the same excellent results produced with charcoal blooms, and have the advantage that they can be charged hot from the reducing furnace into the open-hearth bath, in which they melt down as rapidly as put into the furnace. It is reckoned that heats of 15 tons of open-hearth steel can be made in four hours' time with the aid of a cupola to melt the pig metal and charging the Carbon Iron Company blooms hot, while it takes eight or nine hours at the least with ordinary stock in open-hearth furnaces. In the practice which the Carbon Iron Company intends to adopt, one-third of the total weight of the open-hearth bath will be pig metal, first melted in a cupola and run into the open-hearth furnaces and then diluted with two-thirds of its weight of Carbon Iron Company sponge blooms, which are added toward the last of the operation until the bath is low enough to tap. The reducing operation is much better controlled by this progress of dilution with hot sponge balls than by the addition of iron ore in the pig and scrap process. The slag formed during the melting operation, with the addition of carbon sponge blooms, is excessive and foams up and boils on the top of the bath. At this stage of the operation it is easily removed in large quantities from the charge and allow-

ed to flow out of the openings which have been specially prepared for this operation. In this way eight or ten buggy loads of slag, weighing about 1500 pounds, can be removed from a 15-ton open-hearth heat, this slag does not contain over 10 per cent. of metallic iron existing in it as protoxide. Very little metal either is shotted through the slag at this stage. When this slag has been properly run off the bath, there is but very little trouble to be anticipated from the slag being in too large quantities on the bath in the after operations when it is necessary for the heat to pass down through the slag to the metal.

The materials used for making the open-hearth steel in a 15-ton open-hearth furnace are a mixture of two-thirds of the weight Carbon Iron Company sponge and one-third the weight Castle pig iron, or say as follows: 14,000 pounds Castle pig iron, or 6½ tons; 28,000 pounds Carbon sponge balls, or 12½ tons; 420 pounds 72 per cent. ferromanganese; 42,420 pounds total charge. From repeated heats made under the personal supervision of Mr. Hunt he concludes that from this mixture we can get 80 per cent. of steel ingots, consequently we get 33,300 pounds, with phosphorus below 0.03 per cent. or 15 gross tons of steel ingots. Bessemer pig metal, rather than the more expensive and superior Castle pig, may be used, giving a steel of below 0.03 per cent. phosphorus, and answering fully the requirements for structural purposes with considerable economy.

(To be continued.)

#### Ocean Tonnage Taxes.

The extent to which foreign commerce is taxed under the tonnage laws, the proportion borne by American vessels and the measure of relief afforded by the Dingley act of June 28, 1884, appears from the following statement from the commissioner of navigation:

Year.	American.	Foreign.	Total.
1882...	\$279,151.76	\$1,066,863.98	\$1,346,045.74
1883...	262,629.20	1,057,961.60	1,320,590.80
1884...	272,113.50	1,023,659.00	1,295,772.50
1885...	59,325.29	331,549.86	390,875.15
1886...	74,558.08	432,824.39	507,382.47
1887...	76,530.07	485,657.38	562,187.45

The large reduction of receipts in 1885 and subsequent years was due to the passage of the Dingley act of June 28, 1884, which reduced the tonnage tax from 30 cents per ton per annum to 3 cents per ton upon each entry, not to exceed 15 cents per ton per annum upon vessels entered in the United States from any port or place in North America, Central America, the West India Islands, the Bahama Islands, the Bermuda Islands, or the Sandwich Islands or New Foundland; and to 6 cents per ton upon each entry, not to exceed 30 cents per ton per annum, upon vessels entered in the United States from any other foreign ports. To make the statement complete, still further reduction should have been allowed, such as may be in excess of the tonnage and lighthouse dues, or other equivalent taxes imposed upon American vessels by the Government of the foreign country in which such port is situated in accordance with the second Dingley act of June 24, 1884. Owing to the omission of the word "directly" in the President's proclamation of Jan. 26, 1888, as applicable to vessels from the Netherlands, the commissioner of navigation ruled out the vessels plying between German ports and the United States via Southampton. It is expected that Germany will protest energetically against a decision that practically nullifies the President's proclamation and deprives that Government of the relief it was intended to give.



### The Star Steam and Hot-Water Heater.

The Star Steam Heater Company, of Mount Joy, Pa., are introducing a new form of steam and hot water heater which we show in section and elevation on this page. It is built under patents of Mr. H. H. Lindemuth, and is designed specially with a view to economical coal burning.

From the illustration it will be noted that a cylindrical chamber is arranged centrally to receive the rising gas. In this

radiation the latter is first covered with a sheet of asbestos, then comes a covering of wood, another capital non-conductor, made of alternate pieces of walnut and ash, the whole being held in place by three galvanized brass bands. The grate is simple, easy to shake and dump, and can be easily replaced when repairs finally become necessary.

In Fig. 2 we show an ornamental pipe covering and ventilator turned out by the same firm. It consists of sections of ornamental bronzed cast iron placed one above the other, as shown, to shield the exposed

ment of the town. The promoters of the scheme speak confidently of the future of their enterprise, and claim that the natural resources of the place warrant the expectation that in the near future Little Falls will be one of the most important manufacturing points of the Northwest.

### A New Sun Motor.

Attempts have frequently been made by Captain Ericsson and others to turn to account the energy of the solar rays. All these inventors, however, have worked with steam, which only evaporates under practicable pressures at comparatively high temperatures, and to attain these it has been necessary to concentrate the sun's rays with mirrors. According to *Engineering* M. Ch. Tellier, however, by making use of another working fluid, has succeeded in dispensing with these cumbersome and costly appliances. His engine is worked with ammonia gas, the solubility of which in water varies enormously with the temperature. Thus at 32° F. one volume of water will dissolve about 1000 vol-

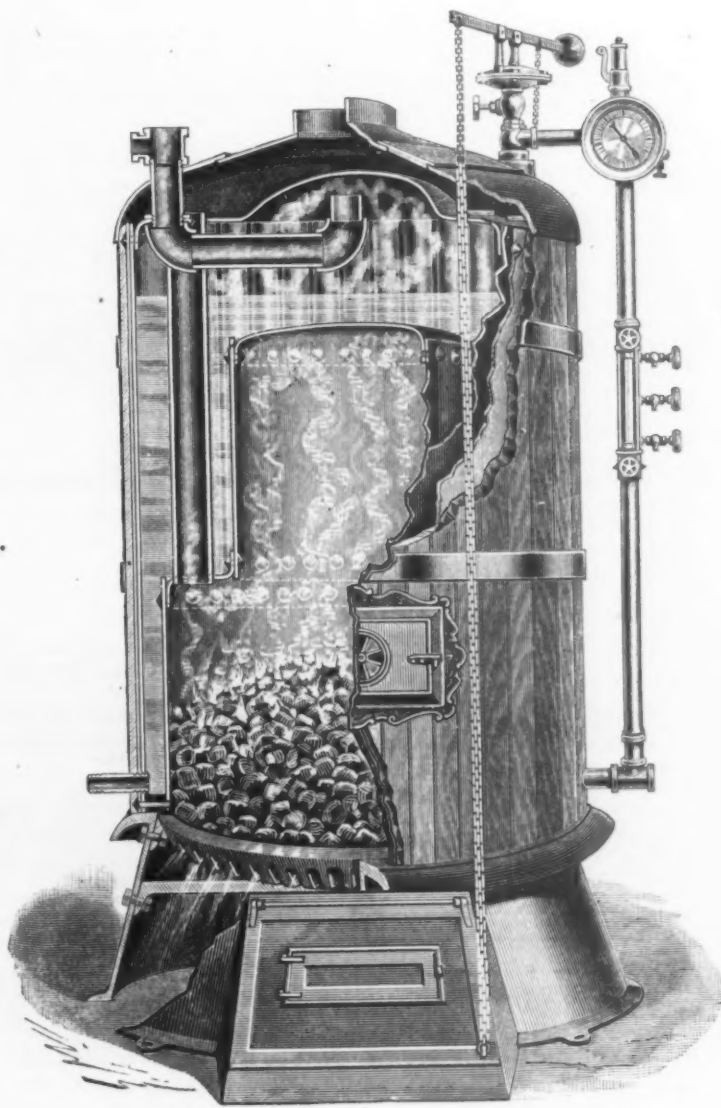


Fig. 1.—Sectional Perspective.

STEAM AND HOT-WATER HEATER, MADE BY THE STAR STEAM HEATER COMPANY, MT. JOY, PA.

chamber it is held until, as the builders claim, all the combustible matter is consumed. Other rising gases will drive the remaining incombustible matter down along the sides of the gas chamber, and thence it will escape through the flues to the air chamber above and pass off into the smoke-flue, not in the form of thick volumes of smoke, but in well-utilized products of combustion, only a very small portion having escaped through the flues unconsumed. Either anthracite or bituminous coal may be burned, but the furnace is more especially adapted to bituminous. A number of hand-hole plates in the dome facilitate the cleaning of the tubes. These, moreover, are easily removed. No cast iron enters into the combination of the boiler. As a protection against loss from

pipe. Each section is 12 inches long, and so held in place by a notch in the piece below and a screw in the wall. The upper section consists of a register, which when open acts as a ventilator to draw the vitiated air from the room.

A party comprising nearly 100 of the prominent citizens of Louisville visited Little Falls, Minn., last week. The object of their journey was to assist at the opening of the extensive works which the Little Falls Water Power Company have just completed at Little Falls. Upward of \$250,000 have been expended by a Louisville syndicate in the works at that point, and the result has been a considerable increase in the population and develop-

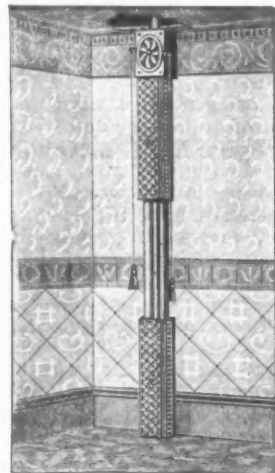


Fig. 2.—Ornamental Pipe Covering and Ventilator.

umes of gas, but at 140° F., a temperature which is frequently attained in the tropics, the amount dissolved is extremely small, hence a comparatively small range of temperature will place at his disposal large quantities of this gas under pressure. In carrying out this idea in practice the ammoniacal solution is contained in a generator exposed to the sun's rays, which, heating the solution, cause the gas to be evolved under pressure, and this is then led off to the cylinder of an engine. After doing its work here the gas is passed into a kind of condenser, where it meets with water taken from the generator through a worm surrounded by cold water, and in this way has had its temperature reduced, rendering it capable of reabsorbing the gas exhausted from the engine, after which the whole is pumped back into the generator to begin a fresh cycle. This apparatus has been worked with a certain amount of success at Paris during the summer of last year, but the atmospheric conditions are said to have been very unfavorable, so that, though the heat absorbing surface had an area of 215 square feet, the work done was only 43,360 foot-pounds per hour.

Geo. W. Westinghouse is about to establish an extensive electric light plant at Pittsfield, Mass., one feature of which will be furnishing power for motors used in light manufacturing.

### Vacuum Pans with Vertical Heating Tubes.

A paper recently read before the Central Association of Sugar Refiners, of Germany, by M. W. Greiner, describes an arrangement of vacuum pan with vertical heating tubes. Serpentine coils were shown to be objectionable for various reasons. To begin with they take up considerable room in the pans with the result that for a given volume of boiled sugar the level of the charge is uselessly raised according to the diameter of the coils. A second inconvenience of the serpentine tubes arises from the horizontal position of the pipe into which they are formed. In consequence of this position, the volumes of steam which congregate about the lower wall are hindered in their natural tendency to rise, and the steam released at this point meeting with an obstruction does not pass at once to the boiling matter. The horizontal position also creates a disadvantage within the tubes themselves. From its entrance to its exit a certain quantity of steam is condensed, so that before passing out the effective heating surface diminishes more and more, and no longer corresponds to the surface of the pipe. The vertical pipes, which are relatively short, do not retain the condensed water, and at their exterior surface the steam is set free without difficulty, and rises unobstructed toward the surface of the boiled syrup. The coil tubes present a third—a mechanical—difficulty: They complicate the emptying of the pan. To avoid this difficulty the diameter of the discharge valve has been increased more and more, without, however, success in preventing the coil tubes from retaining much of the boiled matter.

The vertical pipes, on the other hand, permit the boiled syrup to discharge itself without obstruction. The arrangement, it appears, has been tried with very satisfactory results. A boiler 10 feet in diameter capable of holding from 55,000 to 57,000 pounds, was used in the sugar factory of M. Hecker, at Groeningen, Germany. It was found that steam of from 0.7 to 0.8 atmospheres was sufficient for boiling in the vacuum pan.

Vessels on the Northern lakes are now moving at all the ports, but as yet there are no shipments of ore. The lake fleets comprise a heavier tonnage every year. The grain fleet which has left Chicago alone numbers nearly 100 craft, most of them very large. From such broad facts some idea may be gained of the magnificent proportions of the lake carrying trade and of the marine interests engaged in it. There are about 3000 vessels in active use upon our inland seas, and of late years many have been built which compare favorably with not a few ocean steamships in capacity, appearance, strength and value. Twenty years ago there was not a vessel on the lakes which could carry more than 1000 tons of regular cargo. Now there is one, at least, which has exceeded 3000 tons, besides fuel, and a score of splendid crafts can carry 2500 tons or more. The 2000-ton limit is passed by nearly 100 vessels now afloat, and by almost every new one built. In Cleveland alone eight steamers and one schooner have been launched already this year, every one of which can take more than 2000 tons of freight at a load.

Mr. Charles H. Haswell in his paper on the "Triple-Thermic Motor," read some months ago before the Society of Civil Engineers, ascribes to the performance of bi-sulphide of carbon in an engine cylinder a very remarkable degree of economy, the relative theoretical value of the vapor of the carbon compound as compared with

that of steam being given as 5.916 to 1. Test figures which he gives show for the motor a coal consumption of 1.385 pounds per indicated horse-power per hour. The exhaust vapor from the engine cylinder was passed through a series of surface condensers until perfectly condensed. Mr. Haswell directed attention to the fact that an entire plant designed for the development of the practicability and economy of this type of engine was constructed a short time ago at Cleveland, Ohio, for the Brush Electric Light Company.

### Key-Way Cutting Machine.

We show on this page an attachment to be placed on a planer for cutting key-ways rapidly and accurately, its capacity as to length of key-way to be cut being limited

the tool-block below the level of the box, so that the inner end of the bar will be lowest. Should it be desired to cut a key-way deepest at its outer edge—that is, at the edge of the article which lies against the face of the angle-plate—the box should be lowered below the level of the tool-block. The operation of cutting is accomplished by the ordinary reciprocation of the planer-platen, the cutter-bar sliding freely through the box. Fig. 4 shows a bushing which may be used when a smaller sized cutter-bar B is to be employed.

The device is put on the market by Mr. J. L. Oefinger, of Stamford, Conn.

Some of our Pittsburgh exchanges direct attention to what they call crude petroleum gas, which is being used experimentally for steam raising in a locomotive of the

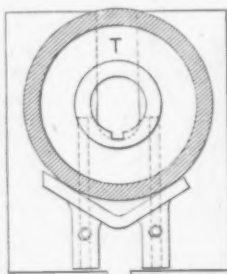


Fig. 2.—Front View of Angle Plate.



Fig. 4.—Bushing for Smaller Sizes of Shaft.

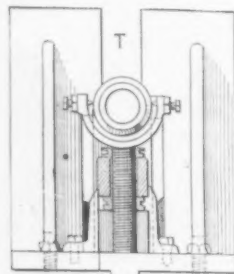


Fig. 3.—Back View of Angle Plate.

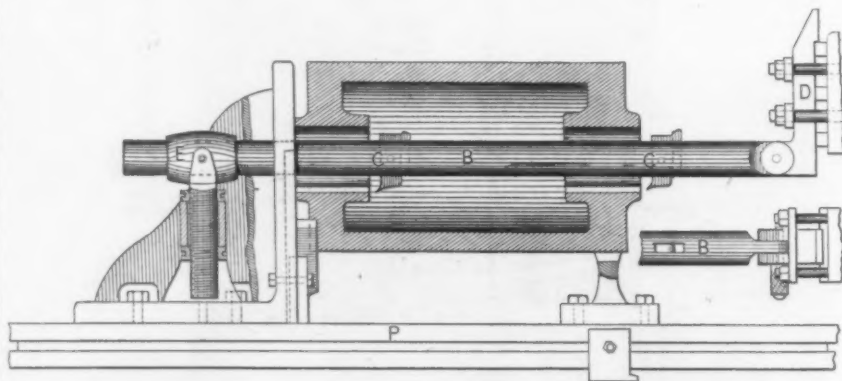


Fig. 1.—Elevation and Section.

KEYWAY CUTTING MACHINE, MADE BY J. L. OEFINGER, STAMFORD, CONN.

only by the length of the planer table. The design adopted will be clearly understood from the engravings.

The pulley, gear or other article in which it is desired to cut a key-way is placed upon a V-shaped rest, fastened to an angle-plate which is bolted to the table P and the cutter-bar passed through the central opening in the work. The inner end of the cutter-bar B is pivoted to the tool-block at D, and the outer end is supported by being passed through an adjustable box E, as shown. A cutter of suitable size to produce the desired key-way is attached to the bar. Should it be desired to cut a key-way of equal depth at both ends the cutter-bar is so adjusted that when the bar has reached a horizontal position a cut of the required depth will have been made in the article, it being, of course, understood that the tool-block is raised or lowered in any suitable manner—that is to say, it may be lowered automatically or by hand. Should it be desired to cut a key-way deepest upon the inner side—that is, upon the side facing the cutter—it is simply necessary to lower

Pittsburgh and Lake Erie road. As we understand it, the oil is vaporized in a retort and is carried into the furnace of the boiler by means of a current of steam. The whole arrangement of retort and auxiliary furnace for heating it is fitted to the tender. Past experience, however, scarcely warrants the expectations of the highly satisfactory results which the present arrangement is supposed to develop.

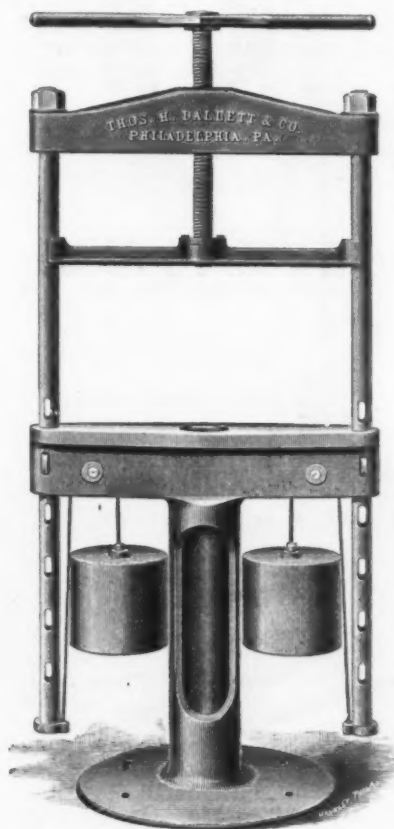
It is understood that the Swinerton locomotive has not proved particularly successful, and that it has been withdrawn from active service in order that alterations may be made. The peculiar feature of the engine, as described by us recently, was the form of the driving-wheel tires, which were polygonal rather than truly circular. No less than 210 flats were milled across the tread of each driving tire. Another inventor has gone still further in this direction, and a recent issue of the *Patent Office Official Gazette* contains a patent for making shallow recesses or cavities in the treads of tires.



**New Mandrel Press.**

The practice of driving mandrels and shafts into and out of work with a hammer or pounding block is fast falling into disuse, on account of the injury done to both work and tool. The use of a mandrel forcing press in a shop not only increases the life of the mandrels used, but also increases the amount and improves the quality of the work turned out, by reducing the liability of breakage and insuring better fits and truer work when finished.

Owing to the increased demand for such a tool the press built by Messrs. Thomas H. Dallett & Co., Thirteenth and Buttonwood streets, Philadelphia, Pa., shown on this page, is of interest. It was originally designed for use in their own works, and is intended to take a large range of work with simple and easy adjustments, having no loose or complicated parts liable to be mislaid or get out of order. For ordinary work the adjustment of the screw, 12



Mandrel Press, Built by Messrs. Thomas H. Dallett & Co., Philadelphia, Pa.

inches, will probably be all that is necessary; but for larger or smaller work the head can be readily raised or lowered by removing the keys in the uprights at the ends of the table. The moving parts being counter-balanced this adjustment can be made quickly and easily. The dimensions of press are as follows: Distance between uprights, 22 inches; range of forcing-head above table, 3 inches to 30 inches; height of table from floor, 28 inches; size of hole in table, 4 inches; range of screw, 12 inches.

A board of navy officers have found that the steel-faced armor turret plates made by Charles Cammell & Co. and John Brown & Co., of Sheffield, England, for the monitor Miantonomah, now being completed at the Brooklyn Navy Yard, do not fit. Until this defect is remedied the vessel cannot be completed and it is possible that the plates may have to be sent back to be re-rolled. There are ten of these plates, each 12½ inches in thickness and 6

feet 3 inches in width, of a total weight of 194 tons. It is thought possible that there may be facilities at the Bethlehem Steel Works to refit them or that the defect may be remedied by additional plates.

**Mr. Carnegie's Letter.**

Inasmuch as Col. William L. Scott, in his recent Congressional speech, alluded to alleged fabulous admissions of a member of the firm of Carnegie Bros. & Co. to him (Scott) in a Congressional committee room in Washington, Mr. Carnegie has written the following explicit denials in answer to an inquiry from Philadelphia relating thereto:

PITTSBURGH, May 16.

To James M. Swan, Secretary American Iron and Steel Association, Philadelphia.—  
DEAR SIR: In reply to your inquiry I beg to state exactly what occurred between Mr. Scott and myself in the room of the Ways and Means Committee, at Washington. I said to Mr. Scott: "You have been making speeches around the country, saying that I would not consent to become an American citizen, and that I was a foreigner, profiting by the high tariff." Mr. Scott said that he had made that statement under a misapprehension, and he now knew it was not true. He had read "Triumphant Democracy," and knew that I was an intensely patriotic American. He promised not to repeat it. I said: "There is another statement you have made, which is equally incorrect—viz., that I took \$1,500,000 of dividends from my manufacturing interests in one year. I gave away \$1,000,000 in one year to found three public libraries, and had given about \$500,000 before, and I explained to Mr. Scott that these libraries would not be finished for several years. Mr. Scott appeared satisfied with the explanation, and said that I was entitled to credit for the disposition I had made and was making of my means. So far from ever having drawn \$1,500,000 from our firm in any one year, I never have drawn \$1,000,000, nor \$500,000, nor any sum approaching it. The money that we have earned has mainly gone into new and improved works to develop still further the resources of this great Republic. So far from the steel rail industries in this country having been excessively profitable the capital invested has scarcely yet received a moderate return. There are 11 large steel rail manufacturing works in America, and of these five have failed and been reorganized, two of them twice. There is no steel rail monopoly. Anybody is free to enter upon the manufacture of steel rails. There are no patents.

If Mr. Scott really believed the profits of the iron and steel business were beyond the average it is strange that he did not continue to operate the iron mill at Erie, in which he once embarked. He can today purchase the shares of most of the steel rail manufacturing concerns in this country for less money than there is capital invested. As for one steel rail manufacturing concern making \$5,000,000 per annum, all the steel rail companies of this country will not make \$5,000,000 profit this year, nor anything like so great a sum. With a capacity to manufacture double the amount of rails required, the steel rail mills of this country have nothing to look forward to for some time but a severe struggle to run part of their works and maintain their organizations. The present price of rails, \$30 at works, shows what we have to expect. Yours, very respectfully,  
ANDREW CARNEGIE.

The Birmingham (England) compressed air and power system, concerning which so much has been heard for the past few years, will, according to latest English advices, be put in operation next month.

**New Emery Grinder.**

The Hall Mfg. Company, 1201-1211 Buttonwood street, Philadelphia, Pa., have just brought out the new emery grinder shown in the annexed cut. It is designed to meet the requirements of mechanics and small shops where an expensive tool is not required. A solid emery-wheel 6 inches diameter, 1 inch face, is mounted upon a decorated iron stand, but can be had inde-



Emery Grinder, Made by the Hall Mfg. Company, Philadelphia, Pa.

pendent with pulley ready to be attached to a work bench, to be run by power. It is furnished as shown in the cut, mounted upon a substantial iron stand for foot and power. Attached to the wheel is a gauge for holding the work to the exact bevel for the grinding of knives and scissors. It is thus especially adapted for the use of cutlers, engravers, tanners, for the sharpening of shears, and all machinists who require the frequent sharpening of small tools. The tool is not designed to take the place of the expensive and costly emery grinders now in the market, but rather to place in the hands of the mechanic an emery-wheel, durable and well made, and at low cost.

The proposition made by Carnegie, Phipps & Co., Lim., of Pittsburgh, to their employees, in which the firm agree to pay six per cent. for all money deposited with them by the men, has already been taken advantage of by quite a number. The proposition was explained in detail in our issue of last week. It went into effect on Monday the 5th inst., and since that date the firm have daily been receiving applications for loans from their men who wish to build houses for themselves. As soon as the application is received it is sent to the attorney of the firm for examination, and if the applicant is liable he receives the money. It does not make any difference how much the borrower wants or in what small sums he intends to pay it back again. There are a large number of the men who leave some of their money with the firm every pay day who do not contemplate building yet.

The Kellogg Seamless Tube and Mfg. Company, of Boston, Mass., who are building works at Findlay, Ohio, are offering stock at \$5 per share. Already \$150,000 have been spent in the development of the plant, and \$100,000 more have been voted to be applied. The stock is \$4,000,000, par value \$10, and the shares now offered are in the hands of a trustee for company purposes.

### Proportions of Steam Boilers.

In a recent communication to the Société Scientifique Industrielle of Marseilles, M. D. Stappfer remarked that as he had never met with any good practical rules for the proportions of boilers for steam engines, he had taken the trouble to examine a very large number of different types, which were working satisfactorily, and from them had deduced the following rules: The water level in the boilers of torpedo boats was usually placed at two-thirds the diameter of the shell, and in marine, portable, and locomotive boilers at three-fourths this diameter. The surface from which evaporation took place should, however, be made greater as the steam pressure was reduced—that was to say, as the size of the bubbles of steam became greater. To produce 100 pounds of steam per hour at atmospheric pressure this surface should not be less than 7.32 square feet, which may be reduced to 1.46 square feet for steam at 75 pounds pressure and to 0.73 feet for steam at a pressure of 150 pounds. It is for this reason that triple-expansion engines can be worked with smaller boilers than were required with engines using steam of lower pressure. The amount of steam space to be permitted depends upon the volume of the cylinder and the number of revolutions made per minute. For ordinary engines it may be made a hundred times as great as the average volume of steam generated per second. The section through the tubes may be one-sixth of the fire grate area, when the draft is due to a chimney from 27 feet to 33 feet high, which in general corresponds to a fuel consumption of 12.3 pounds of coal per square foot of grate surface per hour. This area may be reduced to one-tenth that of the grate when forced draft is employed, but for flue boilers without tubes the area through the flues should not be less than one-third or one-fourth the grate area.

The citizens of Lebanon, Ky., voted on the 12th inst. to build water-works at that point at a cost not to exceed \$60,000, work to begin in the near future. The water is to be brought from the Rolling Fork, a mountain stream some 4½ miles from the city. It will be pumped into the reservoir, which is to be built on one of the hills overlooking Lebanon, the one most available being 235 feet above the principal part of the city. A 10 or 12 inch tube is to carry it to the town. Attention is called to the fact that a very large timber supply is available in the immediate vicinity of Lebanon, particularly white oak being abundant. It is urged that this would afford facilities for the manufacture of wooden ware of any kind, and that a large market for barrels is found in the distilleries within a range of 25 miles, not a barrel being made at Lebanon. Hickory spoke timber is brought in and sold at about \$6 to \$12 per thousand for 1½ inch square, and is shipped to Northern cities to be used for the manufacture of wheels.

The hydrogen required for the balloons used by the Italians in their operations in the Soudan is manufactured at Naples and taken to the seat of war in steel tubes, each of which is about 5½ inches in diameter by 4 feet 7½ inches long, and about ¼ inch thick. The hydrogen is pumped into these tubes at a pressure of 1910 pounds per square inch. Forty of the tubes are needed in inflating a single balloon.

At a recent meeting of the British Institution of Civil Engineers, Mr. E. B. Ellington read a paper on the distribution of hydraulic power in London. In the course of his remarks he took occasion to refer to the large extent to which lifts are

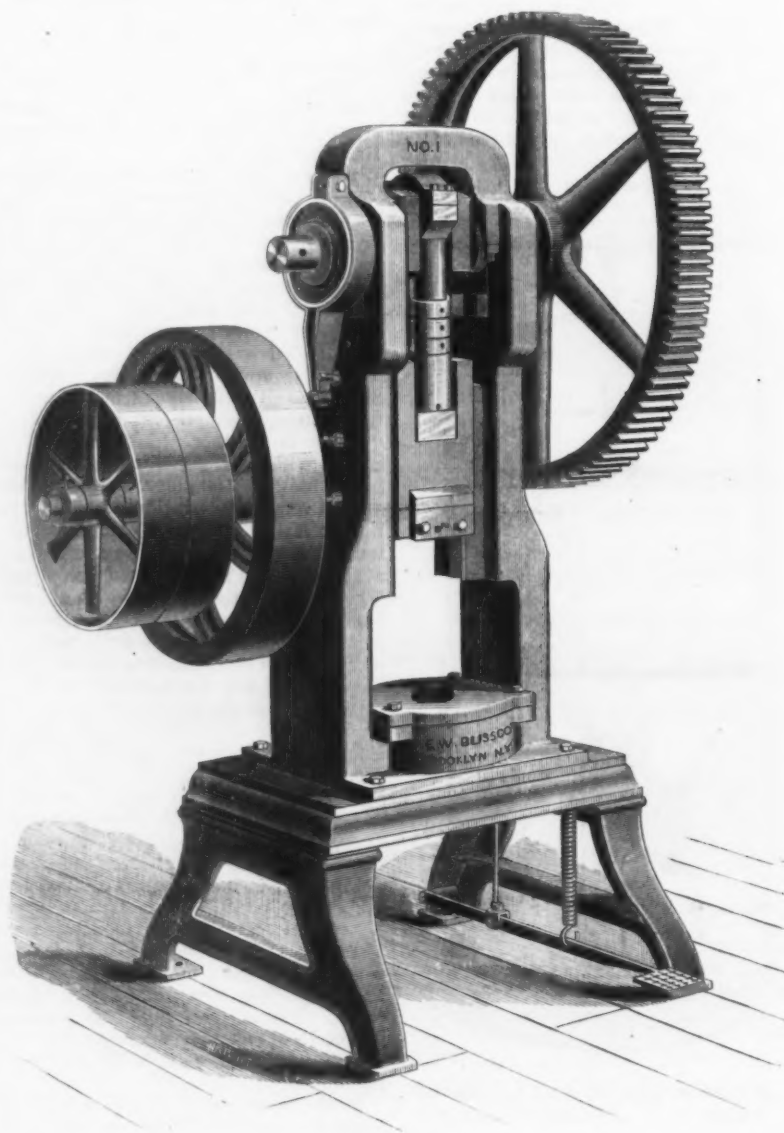
now used, and he considered it necessary to urge the importance of securing the greatest possible safety in their construction by the general adoption of the simple ram.

### Sheet-Metal Reducing Press.

Many articles that are made of sheet brass, German silver, &c., require to be first drawn in a double-action press, having appliances for holding the wrinkles out of the blank while it is being drawn into shape. The following operations by which

pounds, and tight and loose pulleys 24 inches diameter by 5 inches face are mounted on back shaft. The spur gear is 48 inches diameter, the ratio of gearing being 7½ to 1. The press complete weighs about 8000 pounds. Adjustable V-shaped bearings are provided for the slide to take up for wear. The press is built by the E. W. Bliss Company, of Brooklyn, N. Y.

Bearing on street-car propulsion by electricity, the following figures, given by Mr. Harber in the *Electrical Engineer*,



SHEET-METAL REDUCING PRESS, BUILT BY THE E. W. BLISS CO., BROOKLYN, N. Y.

the diameter is reduced and the depth increased requires a press with long stroke but without a second movement, as no blank holder is needed. To supply a single-action press having a long stroke suitable for reducing operations in the manufacture of lamp wick tubes, cartridge shells, napkin rings, pencil cases, match boxes, and other similar work in brass and silver, the press shown in the accompanying illustration has been designed. It may be used either with or without the gearing, according to the work it is desired to accomplish. The arch frame is of the ordinary type, familiar to users of this class of tools, and has a space of 19 inches between the uprights. The forged steel crank can be made to give a stroke of from 1 to 10 inches, as required, and is connected with the slide by an adjustable pitman. A fly-wheel 42 inches diameter, weighing 700

will prove interesting. Mr. Harber estimates that the energy required to be stored in the cells in order to draw a load of one long ton in ordinary weather over one mile of average road, the gradients on which do not exceed 2½ per cent. on an average, is equivalent to 125 watts exerted for an hour. Calling the daily run 70 miles, and the weight of the car 8 tons, it follows that the battery must be of such proportions that it can give out during the run as much energy as is equivalent to  $70 \times 8 \times 125 = 70,000$  watts exerted for an hour. As this energy is not used during one hour, but distributed through, say, 14 hours, the battery will only need to be ½ of 70,000 watt power, or 5000 watt power. If there are 125 cells, each having an E. M. F. of two volts, the E. M. F. of the battery will be 250 volts, and in order that it may develop the necessary 5000



watts it must give a current of 20 amperes—i. e.,  $5000 \div 250 = 20$ . Ohm's law ( $C = E \div R$ ) shows that if the current is 20 and the E. M. F. 250, the total resistance must be 12.5 ohms. Most of this resistance will be in the motor, which should be designed accordingly. It takes 746 watts to equal one horse-power, so that 70,000 watts exerted for one hour is the same as  $70,000 \div 746 = 93.8$  horse-power exerted for an hour. We may assume that the generator gives out 80 per cent. of the indicated horse-power of the engine that drives it. The engine would therefore be large enough to be able to exert 117.2 horse-power for one hour, since 80 per cent. of 117.2 is 93.8. If the charging of the battery lasts 20 hours instead of only one hour, the engine need be only  $\frac{1}{20}$  as large—that is, it will not need to exert more than 5.9 horse-power.

#### The Amidon Improved Chuck.

Messrs. Amidon & Bastedo, of Buffalo, N. Y., are bringing out an improved form of chuck for use in drilling iron or wood. The engraving which we annex readily explains its construction. It will hold a



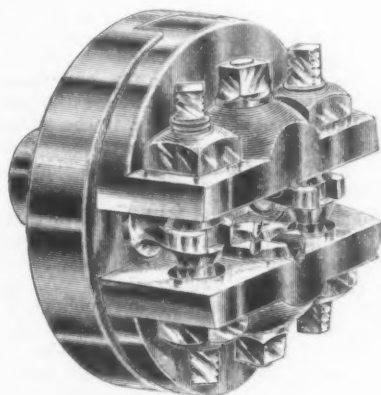
IMPROVED CHUCK, MADE BY MESSRS. AMIDON & BASTEDO, BUFFALO, N. Y.

taper round shank, a straight round, a taper square, a straight square, a taper three-corner and a straight three-corner, and will adjust itself to any bit that is sprung in tempering, so that the point will run true. The jaws are formed of a globe, cut open through the center with three different sized grooves across them.

#### The Central Forge Works.

It is a fact worth noting that in spite of the enormous tonnage of vessels annually entering and clearing New York harbor, the greatest commercial center of the New World does not possess a single forge capable of rapidly producing or repairing large marine and other forgings. It is only lately that works of this character have been completed, through the efforts of Mr. W. F. Pinkham, long connected with similar enterprises. The new concern—the Central Forge Works—began building in November last, at Whitestone, L. I., on a large tract purchased by the company. Actual work in some departments has now begun and the rest of the plant is rapidly approaching completion. The concern is backed by a number of well-known capitalists, W. S. Pinkham being president and treasurer; R. T. Bishop, secretary, and F. D. Moffat, 100 Beekman street, agent. The company have erected, close to the shore, a series of buildings 475 feet long by 100 feet average width, comprising the forge proper, which is equipped as follows:

A 10-ton steam hammer, formerly a part of the plant of John Roach, is specially intended to take care of the largest work which naturally would come to the establishment of this kind. It is served by one 50-ton steam power crane, two 15-ton cranes and has two re-heating furnaces. For a lighter range of work there are three Cuyahoga hammers, two of them 2000 pounds and one 4500 pounds, each with its own heating furnace, the waste heat of which is utilized to raise steam in a Hazelton boiler attached to each furnace. Soft coal is exclusively used in heating, being fired on ordinary grates, because it has been found impossible to employ producer gas as a fuel without incurring the risk of creating a reducing flame, which would rapidly burn those parts of the iron or steel near the furnace doors. At the end of the forge shop, which is a large and commodious building, amply ventilated and lighted, is a spare Hazelton boiler, held as a reserve for raising steam to run the two fans and to drive the large Westinghouse engine which furnishes power for the machine shop. In line with the forge, but divided from it by a fire-wall, is the smith shop, equipped with the necessary tools, a



small steam hammer and cranes sufficient to handle pieces up to 10 tons each. Then follows the machine shop, traversed in the center by a broad gauge track, which runs also through the smith and forge shops. All the machine tools are so placed that it will require only a maximum lift of about 6 inches to bring the mass to be tooled within the range of the machines. The shop is equipped with one Bement 108-inch lathe, one Pond 60-inch lathe, capable of taking work 50 feet long between its centers; one 72 x 72 Sellers planer, which will plane 30 feet, and one 30-inch slotter, with a number of smaller planers, lathes and slotters to do lighter work. The shop is served by two 5-ton, two 10-ton and two 20-ton cranes, all hand power, since, as is noted above, the tools are so placed that only a small lift is necessary. The company have built a dock on to which extends the track running through the works, and they are connected besides by a siding with the Long Island Railroad. This enables the company to receive raw material with great facility, its lighterage cost being only about 10 cents greater than that in New York harbor proper, while heavy articles may be readily shipped to different parts of the harbor and the Sound. Coal-hoisting arrangements are about to be put up within a short time. During our visit one of the smaller hammers was forging crank shafts, the raw material used being old hammered axles. The company, as already stated, have a large tract of land upon which they are now erecting 40 cottages

for their working force. Their specialty will be shafts and forgings for steamships, heavy marine work and repairs, cranks, rods, pins, &c., for marine and stationary engines and for sugar mills and refineries, and the forged parts for dynamos and electric motors. Steel and iron shafts up to 40 ton weight can be handled at these works, the only one, so far as we know, on the Atlantic seaboard capable of turning out such heavy work.

#### NEW PUBLICATIONS.

PRACTICAL HINTS FOR DRAFTSMEN. By Prof. C. W. MacCord. Size, 9½ x 12 inches. 100 pages. Published by John Wiley & Sons. Price, \$2.50.

It is seldom that information is given in so straightforward and clear a manner as we find it in Professor MacCord's latest work entitled, "Practical Hints for Draftsmen," the author having followed, with eminent success, the advice which he himself gives in regard to making a working drawing—viz., that "nothing should be put in it which does not tell something worth knowing." For diversity of practice, especially in the matter of what are popularly but fallaciously considered insignificant details, drafting rooms have become somewhat noted, and it is therefore interesting, to say the least, to follow Professor MacCord in his lucid explanations of good and bad methods and his well-chosen illustrations graphically setting forth the points involved. It is not to the novice alone that the book appeals; even the experienced draftsmen will find, we think, that it may be studied profitably. The book opens with 20 illustrated examples relating to the rules of projection and showing what the author considers good practice in representing parts of machinery. The examples are well selected and the drawings scarcely require any text, conveying their lesson almost immediately on inspection. The representation of bolts, nuts, screws and rivets which, with many, is accompanied by uncertainty as to the most suitable way, is taken up at some length, relative proportions also being given. One of the most interesting chapters is that devoted to free-hand sketching. The value of this accomplishment to the draftsman is obvious, a fair degree of skill in this direction being, in part, absolutely essential. Professor MacCord's practical suggestions are therefore well worth impressing on one's mind and his *fac-simile* reproductions of workshop sketches, made without any special attempt at proportion but with a view to convenience in putting in dimension figures and getting the whole within the limits of a note-book page, will be found very instructive. Considerations of drawing instruments and materials make up the concluding chapter. The advice which is there given for the selection of the various appliances is clearly the outgrowth of experience and may, we think, be safely followed. This applies also to the part on "The Use and Care of Instruments." An appendix, is added, in which are presented tables giving the proportions of bolts, nuts, threads and bolts heads according to the Sellers (United States standard), and Whitworth systems, and a table of standard dimensions of wrought-iron welded tubes.

Natural gas has caused in the past three years, the *Insurance Chronicle* finds, 75 fires in Pennsylvania, causing a total loss of \$900,151. This makes natural gas one of the most destructive fire causes on the list; but, considering the rapidity with which its use has extended and the inevitable hazard connected with it, this total can hardly be considered large. Still, the number of fires has steadily increased as the use of the gas spread, and the Buffalo fire is the worst and most extensive yet.

## CORRESPONDENCE.

## The Duty on Wire Rods.

CINCINNATI, OHIO, May 16.

To the Editor: Will you kindly allow another correspondent, neither "Importer" nor "Rod Mill," to say a little on the wire rod question. "Rod Mill" evidently talks for his own interest and that of other rod mills, ignoring another large class, the wire drawers, whose interests are not always identical. If "Rod Mill" is familiar with the manipulations and drawing of rods into wire he does not tell all he knows or makes statements not at all confirmed by general experience and practice of wire mills in this country, who have used both foreign and domestic rods.

"Rod Mill" contradicts "Importer" as to the superiority of German or Belgian basic steel, and then tells us that rod mills here have great trouble in rolling that stock, that it wastes more than domestic Bessemer, which is claimed to be worth \$1 to \$2 per ton more, &c., and that there is less breakage in drawing the "Bessemer" (American, we presume) than "basic." We fear "Rod Mill" is not well posted when he makes such statements. If you, Mr. Editor, will send inquiries to and get expressions of opinion from wire drawers who are not tied up to or connected with domestic rod mills, and who comprise half the total capacity of the country, you will find them telling you that the foreign "basic" rods are by far the best in every respect, that they are better rolled, not "looped" and "kinked" in coiling, easier drawn, softer, make less scrap and waste and "shorts," and are generally manipulated with less expense than "Bessemer," either domestic or foreign. The writer has tried three or four different makes of domestic rods within a year, and has had the same expression from several other mill managers, and presumes more could be found who would substantiate these facts, because they are known to use no other and pay more for them in preference. That American rod mills find foreign "basic" stock more difficult to roll is certainly no argument against their quality, but rather a proclamation of their inability to do what foreign rod-rollers have been doing very successfully for years. However, as this trouble is no worry of ours, we leave "Rod Mill" to get over his difficulty, with our best wishes for his success. Next, we are compelled to note a point a little aside from the line of discussion, yet forcibly brought out by our friend, "Rod Mill," which may show that he is not entirely a public philanthropist. His statement says: "As a 'raw material' for subsequent manufacture a No. 5 and No. 6 rod are exactly and precisely alike for the purpose they are now mainly used—i. e., fence wire and nails." The readers of *The Iron Age* have probably not yet forgotten the recent attempt of these same "rod mill" men to have the Secretary of the Treasury change the classification of No. 6 rods from 45 per cent. ad valorem to that of finished wire paying about 100 per cent. or more, with no argument whatever, but backed by an abundance of "nerve." That application for an increase was only defeated by the emphatic protest of numerous wire drawers and large consumers, who are now carrying loads that "Rod Mill" and his compatriots would cheerfully increase if possible. If "Rod Mill" has any friends in the same line they ought to invite him to "sit down" and not tell tales out of school. If "Rod Mill" means to assert next that No. 5 rods, or the American rod, which is heavier than the imported called by the same number, costs no more for power than a No. 6 in the drawing, we fear argument would be useless. The same principle would roll a

4-inch billet into a rod with the same power required for a 2-inch.

There is about as much sense in charging less duty on a No. 6 rod as there is in assessing  $\frac{1}{10}$  cent per pound on No. 5—not very much in either case. "Rod Mill" has unintentionally given his side away by the statement that wire rods were raw material. We contend that as half or more of the wire drawers of the country are depending on foreign rods their raw material should be valued on a basis that will permit them to exist alongside of "Rod Mill." Since a good proportion of the tariff is a kind of diamond cut diamond arrangement, benefiting one to the injury of another, "Rod Mill" should not complain. When this tariff was first framed the sublime wisdom of our legislators may have failed to grasp all the changes that the whirligig of invention and time might produce. It may have knocked a hole into the practical workings thereof, through which foreign rods were entered at less duty than "Rod Mill" and his friends had advised Congress would be satisfactory and would be enough to "down" the small fry. Notwithstanding "Rod Mill's" triumphant and exultant shout, "What improvements have been made by foreign rod-rollers?" and the annihilating answer, "None," let me remind him that rolling No. 6 rods was the improvement they perfected. It looks like a useless worry to cry for high protection for our infant industry of "rod mills," with no more formidable competition than a set of old fogies who have attained their limit of improvement and now are probably waiting for their "hand writing on the wall."

The assertion "Rod Mill" makes that "rods" are cheaper now than six years ago, because foreign manufacturers have squeezed labor, is not worthy of serious consideration. Will any one believe a decline of 50 to 60 per cent. represents the value of labor between then and now, when the cost of labor is a small item, comparatively, in rod rolling? As well might be claimed that the difference in price of steel rails between then and now represents the same decline in labor. Everybody knows that is not so. Any one somewhat conversant with iron and steel manufacturing knows this decline is not due to any one cause, and probably wages have suffered least therein. Improvements in steel making—new methods and processes, increased production with old plants without additional labor and improved machinery, competition and the laws of demand and supply—have been the principal factors to produce cheap prices and not the "squeezing of labor."

Our position is this: The American rod mills are utterly unable to supply the demand, and they are sellers of rods only to a small extent. It has even been said that domestic manufacturers of rods have sold their own and purchased imported rods to use in their place because of quality. There are many wire drawers in this country absolutely depending on foreign rods. This class, comprising probably half the drawers of wire, contribute more to the general prosperity of the country and the several communities where they are located than the few rod mills, and are entitled to equal consideration. We are obliged to sell our product at the same price and in the same markets in which concerns equipped with rod mills do, and while "Rod Mill" can sell his wire at cost to us he still has a good margin of profit in his output of rods. Rods are our raw material, as "Rod Mill" has himself stated. We will not go so far as to ask that they should come in free. We are willing that "Rod Mill" should be protected enough to allow him a margin to compensate for paying higher wages and to yield a fair return on his investment, but we challenge him to say that the pres-

ent duty is not high enough for this, and to produce his figures of cost, like the rail men occasionally do, in proof. We believe in protection in reason, but if "Rod Mill" will be warned we will tell him that he had better submit with good grace to a modification in the line of reduction than to hold out for excessive duties, and eventually have the whole tariff wiped out. Times and people change, and there are other interests in the country besides iron and steel, whose views are different and will not indefinitely submit to war taxes.

WIRE DRAWER.

W. M. Bowron.

NASHVILLE, TENN., May 19, 1888.

To the Editor: Referring to the telegraphic report on page 882 of *The Iron Age* of the paper on cost of making iron, by Mr. W. M. Bowron, "manager of the South Pittsburgh division" of the property of this company, will you permit us to say that Mr. W. M. Bowron is an independent engineer and metallurgist, and is not in the employment of this company at all. We merely desire to make the correction because it is not the practice of this company to take part in the public discussion of the much-vexed question of the cost of Southern products. Yours truly,

TENNESSEE COAL, IRON AND R. R. CO.,  
J. BOWRON, Sec'y. and Treas.

According to a current news paragraph the Baltimore and Ohio Road is building a large number of new and very powerful engines. The boilers will be much larger and capable of producing three times the motive power of the largest of any of their present mountain climbers. These engines are constructed for the dual purpose of making greater speed, and, at the same time, with reference to dispensing with the services of so many helpers on the mountains on the main stem and Pittsburgh division. They will be used from Connellsville to Cumberland, and from Piedmont to Grafton and return. One of them will be expected to pull a passenger train of two sleepers, two coaches, a smoker, two express and one baggage car, where two large engines are now employed, and, at the same time, make better time than the two have yet been able to do. A. J. Cromwell, master of machinery of the Baltimore and Ohio, projected and is superintending the construction of the new locomotives. One of them will be put into service between Baltimore and Washington shortly and will cover the distance, 40 miles, in 40 minutes. This distance is now covered in 45 minutes and three stops made en route.

The iron and steel manufacturers of the Mahoning Valley, Ohio, have organized an association under the name of the Iron Manufacturers' Association, and have elected the following officers: President, H. O. Bonnell; vice-president, Myron L. Arms; secretary and treasurer, G. H. Sheadle; executive committee, H. O. Bonnell, Henry Wick, J. G. Butler, Jr., Robert Bentley, Henry B. Shields and Myron C. Wick. The association is the largest and strongest organization of the kind ever formed in Eastern Ohio. The object of the association is mutual protection, especially in the matter of freight rates.

A syndicate, to be known as the Michigan and Canada Tunnel Company, has been formed to tunnel the Detroit River, at Detroit, and the engineers, one of whom is B. Baker, the engineer of the Forth Bridge, in Scotland, says the work will be easily accomplished. This syndicate is composed of D. O. Mills and George Bliss, of New York; Mr. Laidlaw, of the Bank of California, and several officials of the Michigan Central Railroad.



## THE WEEK.

By the fusion of the several bodies of carpenters in the United Brotherhood to be perfected before July 15, 60,000 men will be represented in a single trade organization.

The United States Consul at Liverpool, Charles T. Russell, has made an investigation as to the rates of wages paid to the officers and seamen of the vessels of the various great maritime nations of the world. His report indicates that the rates of wages on the sea, while not holding in all respects the same proportion as the rates of wages paid on land, are, apparently, amenable to the same general laws. He finds that the wages paid on ships sailing under the American flag are higher than those paid on vessels of other nationalities, and, furthermore, that the wages paid on English vessels are higher than those paid on ships owned by inhabitants of the Continent of Europe. Even when an American vessel ships her crew in an English port the captain is compelled to pay more to his seamen than they would expect to receive from the owners of an English vessel which might be lying in the same dock and loading for the same port. It is suggested as an explanation that the preference shown by disengaged seamen for other vessels than American is that, although they may get a little higher pay and are a little better fed, they have to do very much harder work.

The efforts to facilitate rapid transit in New York City meet with various hindrances. The Arcade Railroad scheme is ruled out by Judge Daniels of the Supreme Court, who decides that proof is lacking of the ability of the company to provide adequate financial means, as required by the statute. The Supreme Court, in reference to the Third Avenue Railroad, decides that the company, under its charter, has no authority to change its motor from horse to cable power. The proposed electric railroad for Fulton street has thus far failed to obtain the right of way. On the other hand, the Aldermen favor the application for an electric motor on Fourth avenue.

Wm. H. Webb's bill to incorporate an academy for the instruction of shipbuilders has passed the lower house in the New York Legislature, and is now pending in the Senate. He attributes the decline of American shipbuilding mainly to the greater cost of construction in the United States, as compared with Great Britain, and therefore favors the bounty system, in imitation of the policy adopted by England, France and Italy, so that Americans shall be put on the same plane of advantage. In Mr. Webb's opinion the decline of American shipbuilding has been assisted by the want of the facilities of proper mechanical instruction in the art, and he thinks that the coming academy will be an important factor in the revival of a well-nigh defunct industry.

Governor Hill signed the bill authorizing a commission to select a site upon which to erect a building for the Register's office in New York City.

The recent explosion of a carload of dynamite, at Shamokin, Pa., is quickly followed by the explosion of a powder car on the Santa Fé Railroad, in both instances with a shocking sacrifice of life, showing the necessity for State laws governing the transportation of merchandise of this character. In Massachusetts the regulations are very stringent, wholly excluding liquid nitro-glycerine or leaky dynamite powders and some other like substances from any public conveyance.

Increased attention, says the Buenos Ayres *Standard*, is being paid to the great

Southern Territory of the Republic. Up to the present all the credit, capital and enterprise of the Government have been directed to the central and northern territory, but people are beginning to see that the great development of the future must be sought in the Southern zone. The day immigration and capital seek new fields in the great Southern pampas, in the valleys of the Rio Negro and Rio Colorado, at the foot of the Andes and on the shores of the South Atlantic, railways will stretch from ocean to ocean, and settlers from the northern parts of Europe will fill the deserts and start a country that will eclipse in growth what we have seen in the center and north. There are already several schemes on foot to open up the South. The transcendental scheme at present is the railway from Bahia Blanca to San Luis; that will be followed by railroads up the Colorado, Rio Negro and Chubut valleys, comprising an immense country that needs only the hand of man and the lever of money to become a populous and producing zone. The valley of the Rio Negro alone ought to eclipse all the Santa Fé wheat colonies put together.

In the British Parliament \$17,250,000 are asked for for the defense of colonial ports and coaling stations, and the debates point to the possibility of large orders for rifles and field artillery going to the United States. Russia has obtained in France an enormous loan, amounting to \$220,000,000. The French Ministers are jointly preparing a bill granting a credit of \$6,000,000 for coast defenses.

A letter received in New York from Sir John Power & Co., engineers in London, says that firm have just formed a company known as the Chignecto Ship Railway Company, who propose to build a railway to connect the Bay of Fundy with the Gulf of St. Lawrence, a distance of 17 miles. The money has been already raised in England to the amount of £1,000,000 sterling. The maximum weight of a ship for this road is to be 2000 tons.

The Reading Railroad extensions in the city of Philadelphia, by means of elevated tracks, are expected to enhance the assessable value of real estate in two wards at least \$15,000,000.

Four steamships lately of the White Star Line have been chartered to run in the San Francisco and Japan trade.

A number of iron coal barges of about 30,000 bushels capacity are to be built by W. H. Brown's Sons for the Pittsburgh trade, and it is probable iron barges will come into general use.

An investigation of the operation of the postal treaties with Canada and Mexico shows favorable results. With Canada there is a monthly exchange of about 10,000 packages of merchandise between the United States and Canada, which prior to the adoption of this treaty would have been excluded from the mails. As to the parcels post conventions recently negotiated with South and Central American countries, the returns are indicative of successful and extensive operations. Seven out of the 15 Governments to whom propositions were made have responded favorably.

The Chinese Minister is given as authority for the statement that if Chinese who have lived in the United States are prohibited from returning after a temporary absence, China will retaliate by excluding American petroleum.

The bill providing for a naval reserve, introduced into Congress by Mr. Whitthorne, is of special interest to steamship owners. Vessels now built, or which may be built hereafter, if accepted by the Secretary of the Navy as possessing those qualities requisite for auxiliary cruisers, must

be built of iron or steel, and be entitled to receive not more than 30 cents per ton for every 1000 miles sailed if in the foreign trade, and not to exceed 20 cents per ton if in the coasting trade, and one-half of the crew must be American citizens. In shipping circles the bill is receiving strong support.

Judge Wallace, of the United States Circuit Court in this city decides that the Edison patents, so far as relate to the control of the incandescent electric light, have expired, and the practical effect will be, it is claimed, that the company can no longer obtain injunctions under those patents.

The Governor of Louisiana, in his annual message, gives a cheerful view of affairs generally. Never before was there such emulation in showing to the world the advantages which the State offers for business enterprise.

The St. Louis Board of Public Works is trying to abate the smoke nuisance, and last week made a tour among the foundries and manufactories to see what can be done by introducing smoke consumers.

St. Louis is talking about a new City Hall.

The Brazilian Legation in Washington has received information from Roderigo Silva, Minister of Foreign Affairs, that the Brazilian Parliament has approved the Government bill completely abolishing slavery, and that it had been sanctioned by the Regent on the 13th inst.

Boston and Halifax will have a regular weekly steam mail line after the beginning of July.

Shipbuilding at Buffalo is as brisk as ever, the yards being full of work, with contracts ahead. The Globe Iron Works have three steamships on the stocks and are finishing two more, for the Northern Line and the Lehigh Transportation Company. Four more vessels for the Northern Line are under contract. The Globe Iron Works employ 1300 men, to pay off whom requires a monthly pay roll of nearly \$50,000. The boiler yard is said to be the largest in the United States, with the largest tools capable of perforating and riveting the thickest of metals. One of these English riveters strikes a 100-ton blow.

The new 10-inch steel gun, the first one completed for the ironclad monitors, endured the test to which it was subjected at Annapolis and the hydraulic machinery to regulate its motions received entire approval. The gun is 27½ feet long and contains 45,000 pounds of metal.

Russia is agitated by the recent sudden death of three of her most opulent citizens, two of them by suicide.

Correspondence between the Secretary of State and Mr. Romero, the Mexican Minister at Washington, designed to elicit information respecting the Zona Libre, or Free Zone, established under the Mexican tariff law of 1887, is satisfactory as showing the strip of territory referred to extending from the mouth of the Rio Grande to the Pacific ocean, does not prove detrimental to the United States Treasury by facilitating smuggling. The Free Zone, so far as the United States is concerned, is simply Mexico's substitute for our system of bonded warehouses.

The introduction of the "new process" in flour milling results in a saving of 25 bushels of wheat to each 100 barrels of flour, besides giving a much larger proportion of flour of the higher grades. The total net result to the miller is a gain of \$37.75 to \$42.50 on every 100 barrels, varying according to the variety of wheat. This change has been wrought within the last two years and of late is having a most

important bearing on the export trade, enabling the American producer to derive an additional profit from the supply of foreign markets with a manufactured article rather than the raw material. Economy is also promoted by the storage of grain in elevators at every important point in the wheat section, where it is carried at nominal rates and its identity preserved, and as the large mills now have direct cable communication with all the European markets, they are enabled to sell direct at Minneapolis to the London, Liverpool, Bristol, Glasgow or Continental importer without the intervention of either a commission receiver or a shipper in New York or anywhere else.

The great floods in the Western rivers caused the inundation of many thousands of acres on the Mississippi above and below Quincy. Crops were swept away, cattle drowned and many habitations made desolate. In Arkansas the cotton fields on corn bottoms were overflowed, causing heavy losses. It is estimated that the loss of crops alone amounts to \$3,000,000.

At the annual banquet of the Silk Manufacturers' Association in this city last week, President F. W. Cheney presided and 160 members were in attendance.

The population of Buenos Ayres and the City of Mexico are nearly equal. The former city now contains 465,000 inhabitants, and the latter city, with its suburbs, 429,000; but it is likely that the Argentine city is growing more rapidly, and, in fact, the statistics of its increase are remarkable, chiefly from the accession of Italians, whose labor is of the peon class.

The Collector of Customs at Philadelphia has been instructed in cases of exportations of steel nails manufactured wholly from imported steel slabs by the Danville Nail and Mfg. Company, of Danville, Pa., to allow a drawback equal in amount to the duties paid on the imported material, less the legal reduction of 10 per cent.

The carpenters' strike in Providence was a complete failure, only 200 men out of 1400 having been induced to join the Union.

Banking in Mexico sometimes yields handsome profits. The National Bank at the capital paid last year 11 per cent., or a net profit of 15.7 per cent. on the paid up capital stock.

The Ship-owners' Dry Dock Company, of Cleveland, have entered into a contract with L. P. & J. A. Smith for the building of a dry dock at the head of the old river bed. The dock will be 330 feet long, 48 feet wide and 22 feet deep. The work will be done for \$35,000.

The New York Aqueduct Commissioners awarded to O'Brien & Clark the contract for completing section 16 by laying 70,000 feet of 48-inch iron pipe and its appurtenances for \$1,030,000.

Work on the foundations of the new Exposition Hall, in Pittsburgh, is now well advanced. The expenditure altogether will be \$500,000, of which \$200,000 has been subscribed.

Four tons of powder and dynamite exploded at the stone quarries at Stockton, N. J. Of 140 men at work only the foreman was killed.

The new Hoboken ferry-house opened last Saturday cost \$150,000.

Claus Spreckels expects to start his big sugar refinery in Philadelphia in 12 months, with a daily capacity of 2,000,000 pounds of raw sugar. The refinery building will be 60 x 160 feet, 132 feet in height, and will contain 13 stories. The other buildings will be of proportionate size. Architect Mueller, of New York, has the specifications.

## MANUFACTURING.

### Iron and Steel.

On Saturday, the 19th inst., General Manager John H. Flagler, of the National Tube Works Company, of McKeesport, Pa., notified the employees that a reduction of wages of from  $7\frac{1}{2}$  to 15 per cent. will take effect on June 1. The company claim that the reduction is absolutely necessary owing to the low prices of pipe and general depression in trade. The reduction affects nearly 5000 men. A meeting of the employees has been called for the present week to take action on the matter. At present writing it is not known whether the men will submit to the reduction.

The rolling mill of the Stewart Iron Company, Limited, at Sharon, Pa., has closed down for an indefinite period, throwing about 40 men out of employment. A lack of orders and low prices is given as the reason for the shut down of the plant.

Under date of the 19th inst. the Struthers Furnace Company, of Struthers, Ohio, write us as follows: "The Struthers furnace has been in operation since January 1, 1886, under lease to the Struthers Furnace Company from Fayette Brown, receiver of Brown, Bonnell & Co., of Youngstown, Ohio. This lease having about terminated, and the furnace needing some repairs, it has been blown out. Arrangements for the extension of the lease have not yet been consummated, and it is a matter of uncertainty as to when the furnace will again resume operations. The depressed condition of the iron market, caused by the agitation of the Mills bill and the efforts of the Democracy to impair the manufacture of pig iron, is a decided drawback toward any attempt at resumption of operations.

Sloss Furnace, No. 1, of the Sloss Iron and Steel Company, at Birmingham, Ala., which has been undergoing repairs for some time, will resume operations in a few days.

The annual report of the Crane Iron Company, of Catasauqua, Pa., shows, for 1887, \$156,562 gross earnings, \$48,730 paid for interest, taxes and expenses, and \$107,832 net earnings. The net profit for the year was a little over 7 per cent. on the capital. The company's net indebtedness has been reduced \$136,388, and the interest charge is now but 27 cents per ton of iron made.

No. 2 furnace of the Pennsylvania Steel Company, at Steelton, Pa., has resumed operations after being relined and repaired. All the furnaces of the above company are now in blast, excepting No. 5, on which repairs are being made.

The Clapp-Griffiths department of the plant of the Spang Steel and Iron Company, Limited, at Etna, Pa., a few miles from Pittsburgh, has closed down for an indefinite period on account of a lack of orders.

The Pennsylvania Tube Works, at Pittsburgh, will close down their plant during the early part of June, on account of the depression in the tube market. The stoppage will probably last all summer. About 700 men are employed at the works.

The employees of the Cherry Valley Iron Company, of Leetonia, Ohio, have accepted a reduction of 15 per cent. in wages, and the works are now in full operation.

The works of the National Foundry and Pipe Works, Limited, at Scottdale, Pa., resumed operations last week after an idleness of three months. In the interim one pit was made about one-fourth larger. The plant is now running steadily, producing a full line of cast pipe, ranging in diameter

from 4 to 12 inches. The firm can make pipe as large as 36 inches in diameter. They have large contracts for the water departments of Pittsburgh and Allegheny.

Carnegie, Phipps & Co., Limited of Pittsburgh, have asked the Knights of Labor employees at the Edgar Thomson Steel Works to appoint an accountant. He is to be employed in the office to keep a record of the production of steel rails and arrange the pay of the men according to the sliding scale recently adopted, and under which the men are now working.

P. H. Miller, retiring assignee of Graff, Bennett & Co., of Pittsburgh, has filed his inventory. The appraisement of the property of the firm amounts to \$620,105.94, and the collections and proceeds of sales of goods foot up \$87,598.63, making a total of \$707,704.57. He has received \$13,200 from the personal estate of John Graff and \$19,300 from the personal estate of Robert H. Marshall, but has received nothing from the estate of James I. Bennett. Mr. Miller has paid out \$40,447.21, and has \$47,151.42 in cash to Jay over to his successor.

The Pittsburgh Steel Casting Company, of Pittsburgh, on the 17th received orders to ship the new gun to Washington and it was sent on the following day. While there it will be re-bored and rifled and will then be sent to Annapolis for the final tests. Wm. Hainsworth, superintendent of the Pittsburgh Steel Casting Company, under whose supervision the gun was built, will be present to witness the final tests.

It is stated that work has been commenced on the new stove plant at Latrobe, Pa., as the following dispatch was sent out from that place on the 15th inst.: "The Steel Works, that have caused so much excitement, have decided to locate here. The people raised \$20,000 and bought for them 65 acres of the Bossart farm, the company purchasing the remainder. The water company will give them water free for ten years. They will also get gas free. The stockholders of the Ligonier Valley Railroad will give them the privilege of using their road from the Pennsylvania Railroad to their works. Work will commence as soon as the papers are made out. The works will employ about 500 men."

The employees of the Twenty-ninth street mill of Carnegie, Phipps & Co., Limited, of Pittsburgh, have organized a benefit society. The employees are all invited to join, independent of the work they do. The firm donated \$500 to the society and when Andrew Carnegie learned of it he donated another \$500.

In answer to a report recently published in the Pittsburgh papers, to the effect that the large works of the National Tube Works Company, at McKeesport, Pa., would be closed down in June next for an indefinite period, we have received the following information on the subject from the company under date of the 14th inst.: "We have not given notice of any shut-down in June. We do not think it necessary for us to make public what our future intentions are. Instead of 2500 men we employ about 5000 men. Our men did not submit to a compromise reduction in wages some months ago. We asked them to do so, but they refused, although it was proved that we were paying more than other mills and that our products had fallen off 25 per cent. in value since the last scale was made. We have not agreed to run our works full. We shall run our works as best suits our interests."

Clark Grazier, secretary of the Scottdale Iron and Steel Company, Limited, of Scottdale, Pa., under date of the 14th inst., informs us that the report that their works, which have been idle for some



weeks, would shortly resume operations is without foundation. The works were closed down on account of a lack of orders and low prices, and until a decided improvement takes place in demand and prices the works will continue idle.

A new schedule of wages has gone into effect at the works of the Reading Foundry Company, Limited, at Reading, Pa., under which the workmen will have more work, but will be enabled to earn more wages than heretofore.

The Gere Iron Works, of Port Leyden, were sold by the sheriff of Lewis County, on Tuesday, to Martin A. Knapp, of Syracuse, for \$12,000. The works are valued at \$250,000. A new company will be organized, including Hon. J. J. Belden, W. H. Gere, Jacob Crouse and R. A. Bonta.

The plant of the Stony Creek Rolling Company, Limited, at Norristown, Pa., has been closed down for an indefinite period because present prices for skelp iron do not cover cost.

The owners of the Hollidaysburg mill are about to bring puddlers in from the East, and use Pinkerton men for their protection. They will make an effort to start on the 24th inst. The mill at Duncansville, of the Portage Iron Company, will make a similar effort.

Mr. Fred A. Gordon has blown in the No. 2 furnace of the Nashville Iron, Steel and Charcoal Company, at West Nashville, Tenn., on charcoal. The first cast was made on the 14th inst., No. 2 foundry iron being made, with the furnace working nicely. Mr. Willard Warner, president, informs us that the company are making 175 gallons of wood alcohol per day as a by-product.

#### Machinery.

The Massillon Machine Company, of Toledo, Ohio, have been incorporated, with a capital stock of \$200,000.

The Westinghouse Electric Company, of Pittsburgh, are engaged making experiments to find out the distributing power of incandescent lights. They have several lights put up at Edgewood and Swissville, which were until quite recently further away from the light supply dynamo than any other lights in the world. The distance from the dynamo to the lights was 4 miles. Since then, however, several improvements have been made by the company. The firm are now erecting two plants, one at Bernardino and the other at Riverside, Cal., where the power is respectively 7 miles and 3 miles away from the lights.

The Atha Machine Company, of Warren, Ohio, have received an order from the Lebanon Rolling Mills, of Lebanon, Pa., for a 1000 horse-power cylinder.

The suspension last week of the Bridesburg Mfg. Company, engaged in the manufacture of textile machinery, near Philadelphia, and whose affairs have been placed in the hands of a receiver, is said by the officers of the company and the creditors to be due to the disturbed condition of the tariff question.

The Cleveland and Mahoning Railroad Company have decided to locate their shops in Brier Hill, a suburb of Youngstown, Ohio. The company have secured 45 acres of land and will erect a round-house, with stalls for 45 locomotives, a large machine shop, car shop and other buildings. The shops will employ 250 men.

The Ball Engine Company, Limited, of Erie, Pa., have received the contract for furnishing the complete steam plant for the reorganized Paterson Electric Light Engine Company, at Paterson, N. J. This will include two 100 horse-power engines and three 125 horse-power boilers.

A steam plant will shortly be shipped from the works of the Ball Engine Company to the Rome Gaslight Company, at Rome, Ga., for the Thomson-Houston Electric Company, of Boston.

The Capital City Machine Company, of Nashville, Tenn., have been chartered by J. H. Bean, E. T. Fleming, J. S. Green and others.

The Johnson Electric Train Signal Company have been organized at Portland, Me., with a capital stock of \$500,000, for the manufacture of electric signals and appliances. The following are the officers: President, Samuel P. Abbott, Watertown, Mass.; treasurer, Wm. C. Johnson, Jr., Lynn, Mass.

The Laidlaw & Dunn Company, of Cincinnati, Ohio, have been awarded the contract for two of their Duplex steam pumps to pump water for the grand water falls and fountains in Horticultural Hall and also for the large elevator pump for Washington Park Department, at the Cincinnati Centennial Exposition. This will open July 4th and close October 27th.

The Gates Iron Works, Nos. 50 to 58 South Clinton street, Chicago, Ill., have just sent us an illustrated catalogue devoted to their Standard rock and ore crusher. It gives a large number of engravings explaining the general design and details of the apparatus, and refers also extensively to revolving screens, conveying plants and other adjuncts of a rock or ore crushing installation. The customary price lists and tables of dimensions are given.

The Streater Engine and Machine Works, of Streater, Ill., have just sent us a four-page circular devoted to the Bown three-cylinder engine, built by them. The circular shows also a horizontal Bown engine, similar in appearance to the ordinary run of horizontal stationary engines. The three-cylinder design, we understand, is gradually gaining favor and appears to give very satisfactory results.

D. Saunders Sons, Yonkers, N. Y., have issued their new catalogue, dated 1888, and devoted to their various forms of pipe threading and cutting machines for pipe mill use. The catalogue shows also tapping and drilling machines, and stocks and dies, taps, reamers, tongs, pipe vises, &c. It embraces 60 pages, and is profusely illustrated. The engravings without exception are well executed, making the publication very attractive in appearance.

The Erie Engine Works, Erie, Pa., have just issued a new catalogue devoted to their various types of boilers and engines. These embrace stationary, portable, semi-portable, detached and agricultural engines, and stationary, vertical and portable boilers. The catalogue is dated May 1, 1888, and will undoubtedly prove of interest to the trade. Brief descriptions are given of the different machinery, and very complete specifications are appended.

#### Hardware.

The Wheeling Hinge Company, of Wheeling, W. Va., are running their works to their fullest extent, so far as their present limited facilities will permit. Their new building, which is to take the place of the building destroyed by fire several months ago, is rapidly approaching completion, and the company hope to have their entire works in operation by the 10th of June next.

The Bryden Horseshoe Company, of Catasauqua, Pa., have decided to increase their capital and erect a new factory. The new brick building will be 50 x 100 feet, and triple the present manufacturing capacity of the company. This addition is necessitated by the greatly increased trade of the of the company. At pres-

ent the works are run day and night, and the demand is not met, and in order to supply the orders daily increasing the new plant is determined upon. The erection will be pushed with all possible haste, and will give employment to an increased force of men.

The manufacturing industries of Hamilton, Canada, have received two important additions. The Hamilton Steel Wire Nail Company have been formed, having for their object the manufacture of all standard sizes of common and barbed steel nails, molding nails, brads, copper, iron and steel shoe nails and rivets. Six new machines of the most improved pattern have been purchased at a cost of \$3500 in the United States, and two more will arrive shortly. The business will be under the management of W. J. Phillips, late of the Ontario Tack Company, of Hamilton. The new factory for the Stone Mfg. Company is approaching completion. The company propose manufacturing lanterns, pressed and stamped ware, as well as several other new specialties which Mr. Stone proposes introducing into Canada. About 50 hands will be employed at the start.—*Hamilton Spectator*.

The Southern Horse Nail Company, Decatur, Ala., have contracted for the erection of their factory, work upon which has already commenced. The structure will be erected on the ground donated to the company by the Decatur Land Improvement and Furnace Company, and will be a brick and stone building, 40 x 180 feet. The company's machinery, we are advised, has been purchased and will be ready to be placed as soon as the building is completed, which the company expect will be in about four months. C. C. Harris is president of the company; F. A. Butler, vice-president and general manager; R. H. Ballinger, secretary, and W. W. Littlejohn, treasurer. They will manufacture the Mills' patent horse nail.

#### Miscellaneous.

Chas. A. Schieren & Co., 78 Cliff street, New York, report recent sales of their leather link belting to the following: Maginnis Oil and Soap Works, New Orleans, La.; Joseph Dixon Crucible Company, Jersey City, N. J.; H. J. Klingler & Co., Butler, Pa.; Hughes Lumber Company, Chattanooga, Tenn.; Richmond Mfg. Company, Lockport, N. Y.; North Carolina Phosphate Company, Raleigh, N. C.; Littleton Lumber Company, South Littleton, N. H.; New Haven Rolling Mill Company, New Haven, Conn.; Sheffield Electric Light Works, Sheffield, Ala.

The Page Belting Company, of Concord, N. H., report business as very active during the past month, with general trade in their belting, both tanned and "Hercules Raw Hide," and in the "Hercules" and tanned lacing very satisfactory. Among the special orders which they have received are the following: Belting for the large new brewery being erected by Frank Jones, of Portsmouth, N. H.; main driving belts and dynamo belts for the electric light plant for the Pittsburgh Railroad at North Adams, Mass. A large shipment of "Hercules Raw Hide" belting has been made to Tokio, Japan, also a large shipment of "Hercules" lacing sent to Hamburg, Germany.

There is a probability that the plant of the Indianapolis Car and Mfg. Company, of Indianapolis, Ind., may be removed in the near future to St. Paul, Minn. In order to secure the works the citizens of the latter place have offered the company \$30,000, a free site and buildings, no taxation for ten years, a bonus for every employee who may come with the works, and fuel as cheap as natural gas. The works employ 500 men. The proposition is now under consideration.

# The Iron Age

New York, Thursday, May 24, 1888.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.  
CHAS. KIRCHHOFF, JR., - EDITOR.  
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.  
RICHARD R. WILLIAMS, - - - HARDWARE EDITOR.  
JOHN S. KING, - - - BUSINESS MANAGER.

## Bills of Lading as Conclusive Evidence.

Whatever else it may be a bill of lading is not legal evidence that the property therein described was ever received by the transportation company, or that the railroad or ship is responsible for the same if it can be shown that the goods never were in its possession. This is not a pleasant thought for those accustomed to regard a bill of lading as an instrument covering the ownership and passing the title to certain cotton, grain, manufactures or merchandise described in it, but nevertheless it is true. It does, indeed, within certain limits truly represent and bind the railroad company to deliver or pay for such goods as have been actually put in their possession, but no transporter can be held responsible for, or called upon to produce, goods which have not been in their hands, even when bills of lading acknowledging such fraudulent receipt have been signed by the proper officer. Any merchant, therefore, who pays a sight draft with bill-lading attached runs the risk of not getting his goods, should it happen that the bill-lading was obtained by fraud or collusion between shipper and carrier's agent. The ground of this decision is that the carrier's agent is employed to perform only certain specified duties, and among these is the receipting for goods when actually delivered to the carrier. If the goods have not been delivered, then the receipting for them is beyond the agent's power, and consequently void.

The law as it stands is clearly given by the Supreme Court of the United States in the case of the Ben Franklin. A bill of lading was given by the officers of this steamboat for 150 bales cotton from Memphis to Cincinnati. These bills were attached as security to loans of \$5900, as no cotton had been shipped. The whole matter was a fraud. The transferees of the bills-lading sued the steamboat, but were beaten in the court of last resort. It was held that the Ben Franklin's agent had authority to sign only for cotton actually received. Sometimes the loss happens without fraud but in the ordinary course of business as practiced in some places. The treasurer of a cotton mill in Lowell, Mass., bought last August 750 bales of cotton in Memphis and shortly after received a bill of lading signed by the agent of the Cairo, Vincennes and Chicago Railroad with sight draft attached, which was paid. The mill soon afterward learned that the purchased cotton had been destroyed by fire in the compress sheds. It appeared that the railroad company had issued bills of lading upon surrender of the compress receipts a month or more before the cotton could have been compressed and delivered to them. The Lowell mill having paid for the cotton finds the railroad company re-

fusing to honor the bills of lading. As to cotton, this system of obtaining bills of lading from the carrier before actual delivery of the article is common in the South, for it enables a planter or factor to get money from his bank with which he can make additional purchases, thus doubling the number of his sales. But it is perhaps doubtful whether all the American and foreign mill-owners and bankers understand that a loss of the cotton before delivery would render the bill-lading valueless as against the carrier. For these reasons for several years bills have been introduced in Congress to make bills of lading conclusive evidence of shipments in the hands of innocent parties. These have never become laws. At the present session the House passed a bill reading thus:

That whenever any common carrier by land or water, or its agents authorized to execute and deliver bills of lading, signs and delivers any bill of lading or instrument in the nature thereof purporting to be for goods, wares, or merchandise received by such carrier for transportation from one State to another within the United States, or to any foreign country, such bill of lading, or instrument in the nature thereof, in the hands of any *bona fide* holder for valuable consideration, who acquired the same in the usual course of trade without any notice of any defect therein, shall be conclusive evidence that the goods described therein were actually received by such carrier in the manner and for the purpose as therein stated.

In due course this bill reached the Senate and, in committee, the far-reaching defects were pointed out by able attorneys for the railroads. It was commented upon that a bill of lading was not a negotiable instrument in the same sense as a promissory note, which, in the hands of an innocent party, was valid against the maker, but was rather like a warehouse receipt, which, in any one's hands, was good only as far as it was genuine. It was argued with great force that a railroad could not choose to deal only with honest men, but must accept shipments and issue receipts to rogues as well. But merchants and banks could discriminate and did discriminate in accepting warehouse receipts and other securities, relying as much upon the pledger as upon the pledge. Every other business transaction could be made void if fraud could be proved, but this case was to be an exception contrary to the fifth article of the Constitution. The carrier was not to be allowed to prove that it had been made the victim of a swindle as well as the third party. Every little out-of-the-way station agent, by collusion, could, through fraudulent receipts, bind a railroad company in sums of millions of dollars, a power as great as that possessed by the board of directors when issuing a mortgage.

The force of these objections had such weight that the passage of this or any similar law at this session of Congress is more than doubtful. Perhaps a way out of the dilemma could be found by a system of countersigning. It might be possible to leave the present bill of lading system as it is and at the same time permit any one who is doubtful of the security to demand certification from some higher railroad officer. In such cases time enough should be allowed the official to satisfy himself by examination that the goods had really been received and dispatched. It is the proud boast of England that she has always been willing to change her com-

mercial law to suit the necessities of a changing and extending trade. The progress of commerce requires that our modern instruments of exchange be made to accommodate themselves to modern needs. Payment for goods in advance of arrival at destination by means of a bill of lading as security is such a modern need. If the security becomes in the future so abused as to imperil trade, then means must be found which will overcome the difficulty in a way to be just to merchant and carrier alike. The so-called factors' acts gave a factor the power to pledge goods in his possession, and this pledge was valid in the hands of an innocent party as against the principal. So in bills of lading; if it shall prove to be necessary, we can find some way of confirming its value when passed from hand to hand, where investigation into every detail of its origin could not be reasonably asked.

## Brazilian Emancipation.

Within the past week advices have been received that the Brazilian Parliament, upon the recommendation of the ministry, have pronounced in favor of the immediate end of negro slavery throughout the empire. A bill to this effect promptly passed both houses, and its enforcement will mark one of the notable events of the nineteenth century. We have at hand advices from Rio de Janeiro, cabled via London, indicating the magnitude of the interests involved. The dispatch says: "Full returns have at last been obtained of the slave registration of March 30, 1887. The total number was 723,419, of the declared value of 485,225,212 milreis, or about \$240,000,000. It is estimated, however, that emancipations and deaths have already reduced the above number to 600,000, whose value of 400,000,000 milreis will represent the pecuniary sacrifice the Brazilian slave-owners will be called upon to make this year."

The entire bill as framed by Senator Prado consists of five brief articles, as follows:

1. Declaring free from date of the law all slaves in the Empire.
2. Relieving from further service the "ingenus" or freeborn children of slave mothers.
3. Localizing the new freedmen within their county for two years.
4. Empowering the Executive to issue the necessary regulations.
5. Revoking all contrary provisions.

Emancipation has been in progress since the year 1881, though under a defective administration of the law. In the light of experience the new law contemplates the restraint of the freedman within certain limitations, until he shall in some sense be qualified for self-government. For example, two years must pass before he can remove from his native district. The hope is entertained that through these devices serious disturbance of labor will be avoided. In anticipation of the event now recorded, Paula Souza, an ex-minister of high repute, recently contended that, owing to the facility of obtaining good laborers from the class of indigent whites who were "living on four hills of beans," the picking of the present coffee crop would not be interrupted, and that there was no reason to apprehend



widespread demoralization. It is hardly possible, however, that 600,000 persons can be given instantaneous liberty, comprising a large body of "field hands," without some considerable diminution of agricultural products upon which the commercial world is more or less dependent.

#### Our Imports of Pig Iron and Steel.

Interesting as is a study of the imports of foreign iron and steel, few can form a correct appreciation of fluctuations by running over a series of figures. We have prepared the accompanying diagram to clearly show the monthly imports of pig iron during the years 1886 and 1887,

to the fact that during the period of inland navigation the steel works west of the Alleghenies supply themselves with spiegel-eisen, and at times with Bessemer pig. By far the greater part of the imports are spiegel-eisen, of which our own country makes only a relatively small quantity. This year the amounts imported promise to be small, because many of the steel works bought more than they needed in 1887, and because the output of rails will be much diminished.

The dotted line represents the monthly fluctuations in the imports of what is classified in the official statistics as "ingots, blooms, slabs, billets and bars of steel, and steel in forms not elsewhere specified."

#### The Position of Lead.

Early in March domestic lead brought as much as 5½ cents on the spot in the New York market, while futures were selling at the time on the Metal Exchange as high as 5.35 cents. In London there was some talk about a European syndicate that was to push prices still higher on the other side, and in anticipation of what was to come, as much as £14. 17/6 were paid there for Spanish lead. It soon appeared, however, that the would-be syndicate was merely a bull pool among a few of the operators in London, and since then the metal has gradually declined over there to £12. 7/6. The fact is that in Europe, as

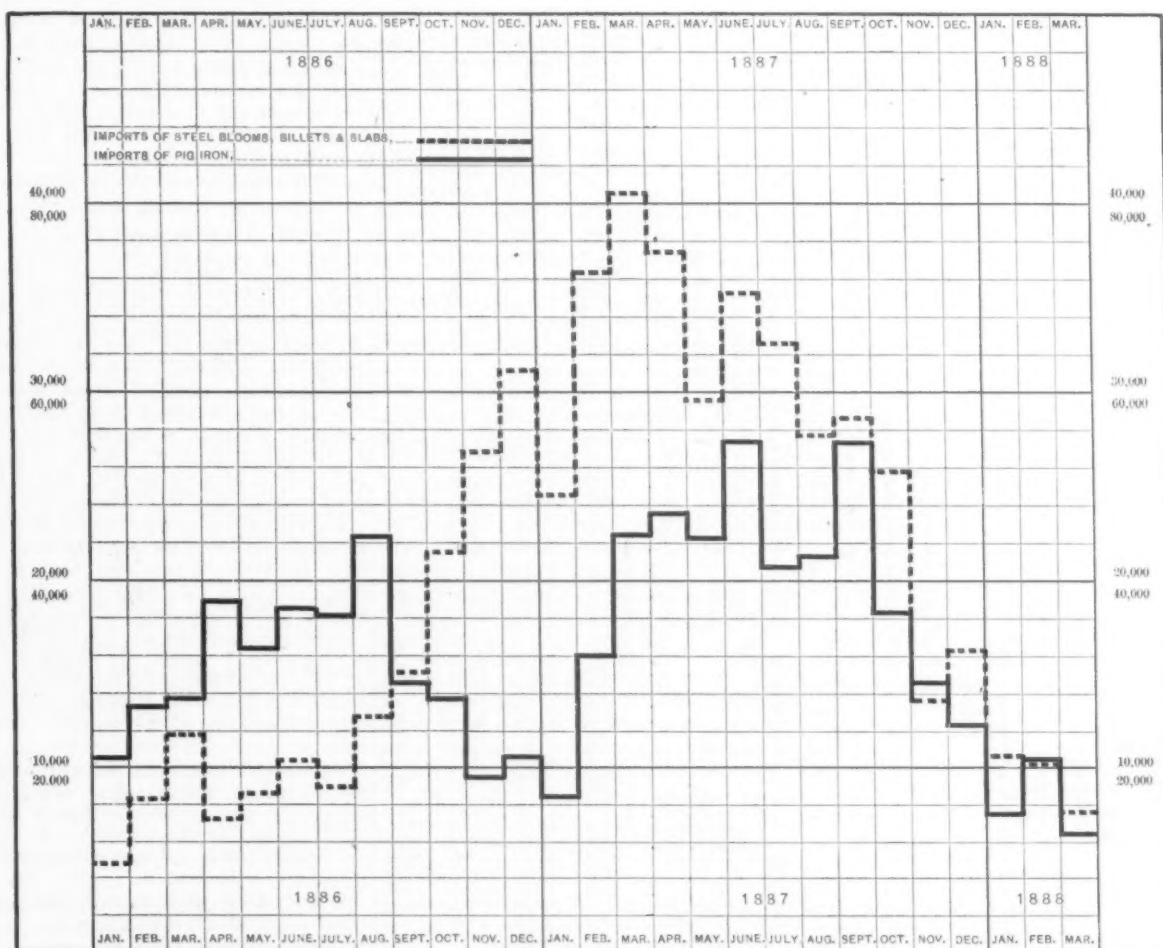


Diagram of Monthly Imports of Pig Iron (black line), and of Steel Ingots, Slabs, Billets and Bars (dotted line).

and for the first quarter in 1888, the darker line representing them while the lower figures on the margin indicate the quantities. Tabulating the imports in gross tons during the period under review, we have the following:

#### Imports of Pig Iron.

Gross tons.	Gross tons.
January, 1886.. 21,217	March, 1887.... 44,960
February..... 26,148	April..... 47,077
March..... 27,320	May..... 44,171
April..... 37,924	June..... 54,627
May..... 32,531	July..... 41,633
June..... 36,974	August..... 42,422
July..... 36,176	September..... 54,517
August..... 44,677	October..... 36,177
September..... 29,213	November..... 29,402
October..... 29,265	December..... 24,351
November..... 19,004	January, 1888.. 15,226
December..... 21,320	February..... 20,751
January, 1887.. 16,614	March..... 12,771
February..... 32,016	

It will be observed that there is an increase in the quantity of pig iron imported during the summer months. This is due

The following table gives the monthly imports, in net tons. The upper marginal figures refer to the dotted line:

#### Imports of Ingots, Blooms, Slabs, Billets, and Bars of Steel, and Steel in Forms, n. e. s.

Net tons.	Net tons.
January, 1886.. 4,798	March, 1887.... 40,518
February..... 8,269	April..... 37,479
March..... 11,909	May..... 29,610
April..... 7,169	June..... 35,188
May..... 8,545	July..... 32,452
June..... 10,296	August..... 27,655
July..... 8,908	September..... 28,407
August..... 12,874	October..... 25,913
September..... 15,021	November..... 13,807
October..... 21,529	December..... 16,182
November..... 26,868	January, 1888.. 10,549
December..... 31,010	February..... 10,174
January, 1887.. 24,421	March..... 7,577
February..... 36,179	

It will be observed how the imports increased from month to month almost regularly from the beginning of 1886, reaching a climax in March, 1887, and then steadily declining up to the present time.

well as in this country, production has for over a year past been outrunning consumption at an unprecedented rate, and that but for the interference of speculation for a rise—of frequent occurrence during the interval—the average value would not unlikely have been one-third less on both sides of the Atlantic than it has been. Spanish exports of pig lead last year, for example, amounted to 130,797 metric tons, as compared with 114,471 the previous year, and 117,640 in 1885. Since then it is again slightly on the increase. As shown by the statistics of the United States Geological Survey, lead production reached the enormous total of 160,700 net tons last year, as compared with 135,629 tons in 1886, and 129,412 in 1885. While, therefore, Spanish exports increased in a twelve-month 14 per cent., American output showed a gain of 18 per cent. At no time

for over a year past have either the European or American market exhibited a healthy activity, proving that consumption was at last coping with the monster production that was going on. Whatever spurts there may have been were purely the result of speculation, most of the time a clumsy manipulation without profit to the operators, and culminating at this writing in our own midst in the accumulation in operators' hands of a heavy stock believed to average in cost about 1 cent over and above what it would bring to-day. In fact, some 15,000 tons are at present stowed away in this manner destined to drag through the dull summer season. Possibly a revival and better prices may be in store for the same some time between the middle of August and the beginning of November, provided the duty be not reduced in the meantime.

The spring trade, unusually late as it was, proved to be execrably bad on this side and fell some 30 per cent. below what it ought to have been, even at a moderate estimate, for it seldom amounts to much in this country in the lead branch. Even granting that the building trade may fully come up to expectations this summer, in view of the moderately prosperous condition of the country and continued large immigration, white lead manufacturers are as much puzzled what to do as their colleagues in the lead branch so long as the duty question is not solved. They will consequently not anticipate requirements in the least. An extra war demand can hardly be expected in Europe, in the first place because war is not seriously apprehended, and in the second place because the leading warlike countries, including Russia, are supposed to have bought pretty much all the lead they will stand in need of for some years to come. As speculators for a rise must by this time be sick of lead on both sides of the Atlantic, we really cannot see whence an improvement is to come in the near future. Left to the legitimate effects of demand and supply, the metal may consequently as well settle down even to a lower level than the present one.

We print elsewhere a letter addressed by Mr. Andrew Carnegie to Mr. James M. Swank, bearing on the allegations of Mr. W. L. Scott, made in the course of the tariff debate. Mr. Randall, in his speech on the same subject, has put forward the following figures furnished to him relating to the question of cost of manufacturing steel rails at the Edgar Thomson:

#### Cost of Steel Rails.

Pig Iron, 2610 pounds.....	\$19.83
Spiegeleisen and ferromanganese.....	3.24
Labor in mill.....	4.80
Ingot molds, fire-brick, fire-clay, coke, oil, maintenance.....	3.20

Total cost.....	\$31.07
Deduct 285 pounds steel scrap.....	\$2.18
Deduct 10 per cent. from wages of 1887.....	0.48—\$2.66
Total.....	\$28.41

These figures, it will be observed, are on the basis of \$17 pig. They will at once be recognized by those familiar with the subject as representing actual work, and that, too, at well-equipped works. Mr. Randall properly adds that there is no allowance for the seconds made and no tem for interest or profit.

#### Our Foreign Trade in 1887 and 1886.

We have condensed from late tables, published by the Bureau of Statistics, at Washington, a statement showing American domestic exports to non-European countries during the calendar years 1887 and 1886, together with imports from those countries, adding by way of comparison the totals relating to the movement with Europe generally. The total trade is shown from these figures to have been \$1,412,139,000 in 1887, against \$1,362,941,000 in 1886, or an increase of \$49,198,000 or 3½ per cent.

*American Trade with Non-European Countries During the Calendar Years 1887 and 1886 in Thousands of Dollars.*

Merchandise only.	1887		1886	
	Domestic Export.	Im-port.	Domestic Export.	Im-port.
Argentine Republic.....	\$5,911	\$4,977	\$5,021	\$4,385
Brazil.....	7,104	56,378	7,477	48,266
Costa Rica.....	1,745	2,035	580	904
Guatemala.....	676	2,729	495	1,857
Honduras.....	575	994	386	699
Nicaragua.....	799	1,536	591	1,355
Salvador.....	574	1,132	476	1,151
Chili.....	2,377	2,631	1,996	2,512
China.....	5,315	17,875	7,056	18,521
Danish W. I.....	632	490	575	333
Greenland and Iceland.....	.....	188	.....	110
French W. I.....	1,439	358	1,347	457
French Guiana.....	146	7	119	1
Miquelon and St. Pierre.....	329	42	346	61
French E. I.....	166	.....	195	.....
Algeria and Tunis.....	340	520	290	520
Other French possessions.....	335	169	334	289
Nova Scotia, N. Brunswick and P. Edw'd.....	2,582	5,760	2,330	4,946
Quebec, Ontario, Manitoba and N. W. Ter.....	30,223	33,709	27,694	31,277
British Columbia, Newfound'd and Labrador.....	1,450	1,825	1,631	1,422
British W. I.....	1,365	184	1,196	158
British Guiana.....	7,007	12,221	6,460	10,165
British Honduras.....	1,559	3,165	1,411	2,474
British E. I.....	334	198	394	333
Cape of Good Hope.....	3,485	17,901	4,839	18,768
Hong Kong.....	1,498	1,258	1,267	1,152
Australasia.....	3,455	1,844	3,153	1,444
Other British colonies.....	9,443	4,613	9,819	4,752
Sandwich Islands.....	372	1,130	483	1,419
Hayti.....	3,211	9,406	3,389	10,706
Japan.....	3,768	1,885	2,702	2,310
Liberia.....	4,151	17,742	2,775	17,072
Mexico.....	104	74	100	53
Dutch W. I.....	8,370	16,294	6,491	12,192
Dutch Guiana.....	553	258	517	337
Dutch E. I.....	241	457	238	350
Peru.....	2,007	3,142	2,273	2,850
Azores, Madeira and Cape Verde.....	829	419	720	429
Portuguese Africa.....	321	36	335	66
Asiatic Russia.....	23	.....	12	.....
Santo Domingo.....	148	134	151	105
Cuba.....	957	1,324	987	1,478
Porto Rico.....	9,146	45,398	10,383	51,213
Philippine Islands.....	1,873	4,516	1,579	4,098
Spanish Africa.....	101	7,872	145	9,841
Asiatic Turkey.....	184	62	214	111
Egypt.....	183	3,326	134	3,434
Columbia.....	896	302	263	255
Uruguay.....	5,557	3,195	5,382	4,003
Venezuela.....	1,332	2,386	1,281	4,406
Ecuador, Bolivia and Paraguay.....	3,049	9,921	2,689	6,548
Asiatic countries not named.....	824	1,195	862	1,196
African countries not named.....	104	34	322	61
Other non-European countries.....	390	1,325	866	1,222
Totals.....	122	29	137	.....
Totals.....	\$133,441	\$306,586	\$142,848	\$279,032
Europe.....	564,879	402,233	556,671	324,397
Grand Total.....	\$703,320	\$708,819	\$699,519	\$763,429

The share of England and her colonies was as follows:

	1887		1886	
	Dom. Export.	Im-port.	Dom. Export.	Im-port.
United Kingdom and Gibraltar.....	\$362,334	\$172,434	\$371,147	\$160,061
British colonies.....	62,272	82,178	60,164	76,928
Totals.....	\$425,305	\$254,612	\$431,311	\$236,989

On comparing the grand totals of American foreign trade during the two years with that part of it done with England and her colonies we arrive at this result:

Import and export, grand total.....	\$1,412,139	\$1,362,941
With England and her colonies alone.....	679,818	668,300
British share, per cent.....	48	49

The slight difference in the percentage shows the steadiness of our relations with England and her possessions.

#### Recent Treasury Decisions.

##### DUTY ON FLAT STEEL IN COILS.

On an appeal from 45 per cent. ad valorem duty the appellants claim that the rods in question, which are described as flat rivet-rods, are not subject to duty at the rate assessed, on the ground that they are "material," and not manufactured articles. The appeal is based on a misapprehension of the facts, inasmuch as the merchandise, which consists of flat steel in coils, was not classified as manufactures, but as "steel," and the appellants do not state any claim as to the proper rate of duty, nor specify under what provision of the tariff the merchandise should be classified. The provision for "iron and steel rivet, screw, nail and fence wire rods" is limited in terms to "round" rods, and does not embrace flat rods; and in the absence of any specific provision therefor the department decides that they were properly classified as "steel not specially enumerated or provided for."

##### DUTY ON TINNED SHEET IRON.

Certain scrap tin having been assessed for duty as "manufactures of tin and iron, 45 per cent." The appellants claim that the merchandise is dutiable at the rate of 10 per cent. ad valorem, as waste, or at the rate of 1/10 of 1 cent per pound, as scrap iron. The appraiser states that the merchandise consists of tinned sheet-iron cut in strips, varying in width from 1½ inches to 3 inches, in length from 6 inches to 18 inches; that the article is not the tin plate of commerce, and, being in its present condition well adapted for use in various kinds of manufactures, is not the merchandise commercially known as scrap tin. In view of this statement the tin strips appear to have been correctly classified as articles composed in part of iron.

Steel watch-chains are properly dutiable as "jewelry," under the recent decision of the United States Circuit Court in the case of Robbins vs. Robertson. Department's decision of a contrary tenor is revoked.

Certain knives, which consist of a detached blade and wooden handle into which the blade slides, so that it may be safely carried in the pocket, are dutiable as "pocket knives," under the provision therefor.

So-called wire nails, commercially known as "wig-points," which are not in fact nails, are dutiable as unenumerated manufactures of metal.

On Wednesday, the 16th inst., Singer, Nimick & Co., Limited, steel manufacturers, at Pittsburgh, posted notices through their various mills in the West End, notifying their employees that a reduction of 10 per cent. would be made in wages, the rule to go into effect May 28. The notice further states that on February 27, 1887, the men were granted an advance of 10 per cent. and that the present reduction would only make their wages the same as they were prior to that advance. All the employees in the melting and rolling departments of the mill are affected by the reduction, excepting the boss melters, heaters, rollers and some of the men employed by the rollers. It is thought the reduction will be accepted by the workmen and that no stoppage of the works will take place.

The building trades of New York City have wisely concluded that it is unnecessary to enter upon any strikes this season, as the rates of wages and the hours of labor are satisfactory. It is a wise conclusion.



# The Mining Engineers.

## Birmingham Meeting.

The fifty-first meeting of the American Institute of Mining Engineers, which took place last week, at Birmingham, Ala., was one of the most interesting in the history of the institute. The attendance was fairly representative of the membership.

This meeting was not so rich in the presentation of valuable papers and in interesting discussions as many of its predecessors had been, but it was particularly favored with the ample opportunity presented by the people of Birmingham, Anniston and vicinity to the visiting members to observe the tremendous strides which have been recently taken in the development of the great natural resources of Alabama, which are now attracting more attention than ever. Chairman Kenneth Robertson, of the Local Committee, ably assisted by W. H. Woodward, T. H. Aldrich, Thomas Seddon, F. Sloss and others, prepared a most comprehensive programme of visitation to the leading points of interest in the district and the various manufacturers and mining operators contributed most liberally toward entertaining the institute with boundless hospitality. The Louisville and Nashville Railroad Company, who have done much to promote the development of the mineral wealth of the South, as well as the Georgia Pacific Railroad Company, provided special trains to transport the visitors over the district with a maximum of convenience. The Louisville and Nashville Railroad, who are well named the Pennsylvania Railroad of the South, have particularly distinguished themselves for their enterprise in keeping up with the requirements of the situation, and have recently expended large sums in the construction of branches to new iron ore and coal mines to enable the materials of manufacture to be assembled at all of the ironworks cheaply and expeditiously. Owing to this fact a very large part of the excursions of the week occurred over the mineral branches of this company.

### First Session.

As our dispatch last week announced, the first session was held on Tuesday morning at 10 o'clock, at O'Brien's Opera House, Birmingham, by Chairman Robertson, who introduced E. T. Talioferro, a prominent citizen of Birmingham, who welcomed the institute to the city in a brief but eloquent address. He was followed by James E. Webb, representing the Chamber of Commerce and the business interests of the city. President W. B. Potter, of the institute, responded in an appropriate manner, and called upon Secretary R. W. Raymond to further voice the thanks of the institute for their cordial reception. The business of the institute was then formally opened and the first paper read was a "Biographical Notice of Prof. Byron W. Cheever," late in the chair of metallurgy at the University of Michigan, a recently deceased member of the institute, prepared by Dr. W. H. Pettie, of Ann Arbor, Mich., and read in his absence by the secretary. The next paper was on the "Cost of Producing Pig Iron in the Sequachee Valley, Tenn.," by W. M. Bowron, of South Pittsburg, Tenn., who prefaced it with an explanation that it was intended to counteract the highly colored stories told of the exceeding cheapness of the cost of producing pig iron in the South. It was in the nature of a composite photograph, intended to apply to no furnace in particular, but to give about the average cost of making pig iron in the South under the usual conditions of modern furnace plants, careful management of mine and furnace,

and close proximity of materials. He specially disclaimed that it referred to the furnace work of the Tennessee Coal, Iron and Railroad Company. Analyses of ores and fuels were given, together with full details of the elements of cost from the mine to the pig iron on cars ready for shipment. His conclusion was that a gross ton pig iron cost \$10.75. Mr. Bowron's paper was not discussed, but a few members asked for further explanation of some points, which was freely given. He was followed by A. F. Brainerd, of Birmingham, with a paper on the "Henderson Steel Process."

A brief discussion followed, the object of which was to secure a more definite statement as to what became of the phosphorus eliminated, but upon this point Mr. Brainerd was unable to throw any additional light beyond what he had stated. The business of the session then closed.

In the afternoon an excursion was taken over the Birmingham Mineral Railroad, of the Louisville and Nashville Railroad Company. The first point visited was the red hematite mine of the Pioneer Mining and Mfg. Company, at Grace's Gap. This is the company of which Samuel Thomas, of Hokendauqua, Pa., is the leading owner. The visitors were shown an open working of a 30-foot vein of ore close to the railroad, the deposit extending back  $\frac{1}{4}$  mile. Three well-defined grades of ore occur in regular strata, the top running 51 per cent. in metallic iron, the middle about 41 per cent. and the lowest about 39 per cent. The lowest grade contains a varying percentage, averaging about 17. Notwithstanding its leanness this is the favorite ore of the district, and in many places is specially obtained by underground workings. The other grades also contain lime, but in much less quantity. The ore from this bed is delivered at the furnace, 11 miles distant, at a total cost of 75 cents per ton. The railroad freight on this haulage is but 25 cents per ton. A number of Eastern Pennsylvania pig-iron manufacturers, who were in the party, were exceedingly interested in these figures of cost and comparisons were instituted between the freight charges on the materials used in making a ton of iron in this district and in Eastern Pennsylvania. The total charges in the Birmingham district on all the materials were found to be about \$1.12 $\frac{1}{2}$  per ton of iron, as against \$4 to \$5 in the Lehigh and Schuylkill valleys, or enough in itself to enable Southern pig iron to be put down in Northern markets in competition with Northern iron. The next point visited was the Morris red hematite mines, operated under lease by the Morris Brothers. These mines are very extensive, and are worked partly in open cuts and partly under ground. About 1000 tons is the output. They are not connected with any furnace company, the ore being sold to the furnaces generally, much of it going to furnaces in Tennessee. Machinery of the most improved character is used for mining and handling the ore, including the loading into cars for shipment. Negro miners are mainly employed here as elsewhere in the district, and they have shown themselves to be a very efficient class of laborers. They receive from \$1.10 to \$1.25 a day. The ore mines of the Sloss Iron and Steel Company were next visited. These are also mines of red ore, and are operated mainly with negro miners and furnished with the most improved machinery and appliances. The interior of the mines was visited, the principal opening extending 1400 feet into the mountain side by a level gangway, which was illuminated with colored lights at its farthest end to show the formation, the character of the rocky roof, &c.

Another session of the institute was held in the Opera House in the evening, at

which a paper was read by Professor Phillips, of the University of North Carolina, at Chapel Hill, on "Phosphate Slag," with special reference to its value as a fertilizer. Mr. Phillips did not enter into the manufacture of basic steel in the South, but, assuming that in time the phosphatic ores of this and other Southern iron ore districts would be used in the manufacture of steel, he dwelt upon the importance of the basic slag to Southern agriculture, and showed the great benefits which would flow from an abundant supply of this important material. His paper was highly interesting, and called forth an earnest discussion of the possibilities of the manufacture of basic steel in the Birmingham district. Dr. Raymond called attention to the fact which should not be overlooked that a true basic pig iron was not merely a pig high in phosphorous, but that it was also low in silicon. He argued that it would be somewhat difficult to make basic pig iron from the highly silicious ores of the Birmingham district, but his views were combated by others who believed that the silicon could be reduced in the blast furnace if it should be found desirable to produce low silicon pig iron. During the course of the discussion a number of the members gave interesting statements of their personal experiences in the manufacture of pig iron for special purposes.

### Wednesday, May 16.

Wednesday was devoted entirely to excursions. The new furnace plant of the Sloss Iron and Steel Company, at North Birmingham, was first visited. Two stacks are here being rapidly erected by Gordon, Strobel & Laureau. They are of the standard size of this district, 75 x 17 $\frac{1}{2}$  feet, and are each equipped with four Gordon-Whitwell-Cowper stoves. The buildings are very substantially constructed of brick and iron. One will probably be completed and blown in in July, and the other in September. They occupy a very fine site, with ample room for extensions and additions if deemed advisable in the future. Attention was here called to the fact that Birmingham now erects its own iron buildings, made of Birmingham iron by Birmingham workmen. The next plant visited was that of the Pioneer Mining and Mfg. Company. It was a memorable day in the history of this company, as on that morning at 4.30 o'clock the blast had first been turned on in their furnace stack. The visitors inspected every part of this furnace with interest, as it represented the entrance into the Birmingham iron district of a family of Lehigh Valley iron manufacturers. The convenience of the arrangement of the plant was highly extolled. The supply of coke is obtained from beehive ovens located in the rear of the stock house. Cahaba coal is at present being used. It is delivered directly into the ovens by tracks running over their tops, and the coke is drawn off at the sides, cooled, and loaded into dumping cars running on a track below. These cars are drawn by an inclined plane to the tunnel head of the furnace and their load is dumped directly into the furnace. No barrows are used either for coke or ore. The furnace is now working nicely, several casts having been made up to the time of writing. A short run was then made to Ensley, at which place the great four-furnace plant of the Tennessee Coal, Iron and Railroad Company was inspected. One furnace is now in blast, making an average of about 160 tons daily. Each stack is 80 x 20 feet, making them the largest in the South. The second stack will be completed and is expected to be blown in this week. The two others will follow as rapidly as possible. A short distance from these furnaces are the Pratt coal mines, which were next visited, many of the party taking the opportunity

direction of Mr. Mills's proposition. The to descend a shaft to the main seam, 204 feet below the surface. The vein is 4 feet 9 inches thick and has an excellent roof, requiring very little timbering. Convict labor is largely employed. These mines now turn out at their various openings from 3000 to 3200 tons daily and are capable of being run up to 4000 tons. A large plant of coke ovens is located near them. For a long time the Pratt seam was considered the only coking coal in this district, but it has now been found that the coal of the Lower Cahaba field will also produce good coke, so that the Pratt mines now have a competitor. The coke problem of this district has been thoroughly settled by recent developments, and it is believed that from this time there will be no difficulty experienced by any of the Alabama furnaces in securing fuel, even if the number of furnaces should be greatly increased. At Ensley an excellent lunch was served by the Ensley Land Company, now engaged in building up a town at that point. In this connection it might be well to state that Ensley and all other suburban points are connected with Birmingham by a system of steam railroads known as dummy lines, small coke-burning locomotives being used, of a type similar to those employed on the elevated railroads of New York. They far surpass horse railroads in the efficiency of their service, although they necessarily run at greater intervals. These dummy lines are a peculiar institution of Birmingham, having brought within easy reach of the center of the city a long area of suburban property and thus greatly reduced the price of building lots. They are being introduced into other cities of Alabama and some enterprising Birmingham people have even gone to Memphis, Tenn., and started a similar line there. From Ensley a run was made to Wheeling to visit the furnace plant of the Woodward Iron Company, one of the most successful furnace enterprises of the country. One furnace was in blast, but the other is now out, undergoing repairs. Bessemer was next visited. This town, now numbering 4000 inhabitants, was actually "born" on the 12th of April, 1887. A virgin forest then is now a bustling city, with several lines of railroad running to it or fast building branches in. The principal improvements consist of the furnace plant of the DeBardeleben Coal and Iron Company, and a large rolling mill. There are two blast furnaces in the plant, each 75 x 17 feet, built by J. P. Witherow. They are equipped with Whitwell stoves and Dickson blowing engines. Construction work has been finished and they are expected to be in blast by the time this appears in print. Coke will be made from coal from the Blue Creek coal basin in a very fine plant of beehive coke ovens located near the furnaces. This plan has been adopted to avoid frequent handling of the coke. The rolling mill is fast being pushed to completion. It contains 24 single puddling furnaces and will have the necessary heating furnaces and trains of rolls to turn out 125 tons daily of plate, sheet, bar and guide iron. A peculiar feature of this mill is that the ground has been raised inside the mill 8 feet above the ground outside, so as to facilitate the loading and unloading of cars on tracks running alongside the mill. Overhead railways are arranged to serve the puddling furnaces.

[Pressure on our space compels us to hold Thursday's, proceedings over till next week.—Ed.]

The extensive building of wagon roads throughout the republic of Honduras promises a corresponding growth of the fruit trade with the United States.

## Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., MAY 22, 1888.

The Senate Committee on Finance, in order to take time by the forelock, at a recent meeting appointed a sub-committee, consisting of Senators Allison, Aldrich, Hiscock, Republicans, and Beck and Harris, Democrats, with authority to prepare a revenue reduction bill for consideration in general committee, and to be held in readiness as a substitute for any bill which is likely to be received from the House.

The majority members of the committee have been watching very closely the progress of the debate in the lower body, and are entirely satisfied that no bill which will receive their vote will meet the views of the majority of the Senate. Therefore, it is proposed to have a bill of their own in readiness. The theory upon which the Senate bill is to be constructed is revenue reduction rather than tariff revision. Senator Morrill, in speaking of the subject, said: "There is no necessity for tariff revision at this time. What the Government wants is less revenue, in order to keep down the surplus. The most direct way to reach that without injuriously affecting the interests of home trade and industry is what we will aim at."

The Senate bill as far as outlined provides for a repeal of the tax on tobacco, also the duty on alcohol used in the arts. It reduces the duty on sugar one-half. On this point there is a difference of opinion. There is an inclination on the part of some to place sugar on the free list and to provide a bounty of 2 cents a pound for the benefit of home producers. This action in regard to sugar is designed as a movement to break up the sugar trust, which Congressional inquiry has demonstrated is an imposition upon the people. The majority of the committee do not believe in the free raw material doctrine where it comes in conflict with the interests of the exploitation of home resources. Some articles may be placed on the free list, but it will not be such products of extended industrial enterprise as coal and iron ore. Lumber and salt are a question for consideration.

No effort will be made to increase duties. Tin plate and cotton ties will remain respectively at 1 cent a pound and 35 per cent. ad valorem. Steel rails will be placed at \$14 a ton. In regard to the schedules generally, the purpose of the committee is simply to correct inequalities. Some articles are over protected. Where that is the case, without doing injury to the home product, there may be reduction.

The great bulk of the reduction contemplated will come from tobacco and sugar, which, with alcohol used in the arts and some miscellaneous items, will foot up about \$90,000,000. The Senate bill will be a very simple one, and will be genuine revenue reduction and not an assault upon the industries of the country. The Senate committee will give hearings to a certain extent. These, however, will be confined only to interests upon which some change of rates is proposed. Items upon which there will be no change will not be called upon to submit statements.

A printed address by the Eastern Pig Iron Association explaining the operations of the Mills bill upon that important branch of industry has been submitted to the committee and will be considered in connection with that portion of the Senate bill when reached. The Mills bill proposes a reduction of the duty on pig iron.

The ultimate work of securing a bill which will receive the concurrent action of the two houses of Congress will be done in Committee on Conference. The House will pass a bill of some kind in the

members of the Senate committee are united in the view that a bill will pass the Senate, though it may be a substitute, if one comes over from the House. This would throw the matter into conference. By mutual concessions a compromise bill will be agreed upon, and the Senate and House will concur. By the time this end shall have been reached the month of September will have arrived, and the national campaign will be warming into maximum energy.

The general debate on the tariff bill having ended in the House, the Republicans are unwilling to agree to Chairman Mills's cross-cut proposition to first take a vote on the proposed Republican bill, then on the Randall bill and then on his own. The former propose to run through a course of amendatory propositions and speeches. There will be little, if any, further consideration on the tariff question before July 1. Appropriation bills will now have the right of way for a time. On Friday of next week a large party of Democratic Senators and Representatives will start for the St. Louis convention. They will be back by June 10; about the 15th the Republicans will take their convention outing and may be absent until the 25th or later, according to the time it may take to make a nomination. The tariff question will then be taken up in earnest and be continued until disposed of. add to others & make sep. art. if neces'y

A recent issue of the Wheeling (W. Va.) *Intelligencer* contained the following: There is a striking discrepancy in the price of nails now and 50 years ago, and as striking a discrepancy in wages then and in 1888, albeit the other way. In an old scrap of newspaper, bearing date April 17, 1838, which was recently found by Mr. W. F. Stifel among some old papers in his attic, is a price list of nails and iron in an advertisement of the Top Mill. Then everything was quoted by the pound, and as 100 pounds of nails make a keg, the price per pound in cents is equal to the price per keg in dollars. As nails are now sold at from \$1.90 to \$2.50 per keg, equal to 1.9 to 2½ cents per pound, the great difference is seen at a glance:

Nails and Spikes.	Per lb.
10d, 12d, 16d, 20d.....	5¼
8d, 9d.....	6
6d.....	6½
5d.....	6¾
4d.....	7½
3d.....	8 1-5
Spikes and boat nails.....	6½

Hoop iron ranged from 7 to 9 cents per pound; sheet iron from 7½ for 13, 14 and 15 gauge to 8½ cents for 22, 23 and 24 gauge.

Despite the opposition of the Dominion Government when a connection between the Canadian Pacific and the United States system of railways was first proposed, the entire Northwest is likely soon to be in communication both with the seaboard and the interior by direct routes. The fact is announced that the sale of the Minneapolis, St. Paul and Sault Ste. Marie Railroad is to be consummated at an early date, not to the Canadian Pacific Railway Company direct, but to a number of parties very largely interested in the Canadian Pacific. The transaction will materially benefit the various properties of which the new "Soo" system is made up, comprising the Sault Ste. Marie and Atlantic, the Minneapolis and Pacific and the Bismark. Aberdeen and Northwestern Railroads—about 985 miles in all. The system will be enabled to exchange traffic with the Canadian Pacific, Michigan Central, Northern Pacific and all other lines at its terminal points, and will be a valuable American branch for the Canadian Pacific.



### New Lightning Magazine Rifle, .22 Inch Caliber.

Colt's Patent Fire Arms Mfg. Company, Hartford, Conn., have recently added a .22 inch caliber to the line of New Lightning Magazine rifles, which they have heretofore been making. Of this new

2, and is slightly raised by a cam on the slide A when the handle and breech bolt G are drawn to the rear in opening the breech. By this means the column of cartridges in the magazine is held in the magazine after a cartridge has entered the carrier chamber, and no magazine gate is required. Another feature peculiar to this rifle is the downward projection from the

brace B, slightly raises the carrier to close the magazine, unlocks and moves to the rear the breech bolt G, cocks the ham-



Fig. 1.—New Lightning Magazine Rifle, .22 Caliber.

rifle, which differs from the Lightning rifles of larger calibers in several important features, illustrations are given in the accompanying cuts, a general view of the rifle being given in Fig. 1, the method of charging the magazine being shown in Fig. 3, and detailed view of the action being given in Fig. 2. One feature of this rifle is the fact that either long or short .22 caliber cartridges can be used promiscuously in the magazine. In this rifle the barrel is made either octagon or round, its length being 24 inches, with a capacity for

forward end of the breech bolt G, shown in the unshaded portion of the bolt below the letter G. The effect of this device is that when the breech bolt is drawn back from its forward position, the rearmost cartridge follows the bolt, resting against this projection and only moving as the bolt moves. The jump of the cartridge through its entire length is thus prevented and the danger of premature explosion which exists in other magazine guns using rim-fire cartridges, due to the shock from this jump, is entirely avoided. The

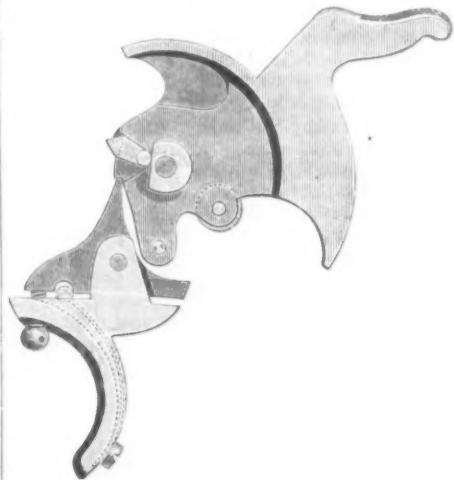


Fig. 4.—Patent Set Trigger, for Rifles, .32 .38 and .44 Caliber.

mer H, ejects the empty shell, raises the carrier lever L and the carrier I, presenting a loaded cartridge in rear of and

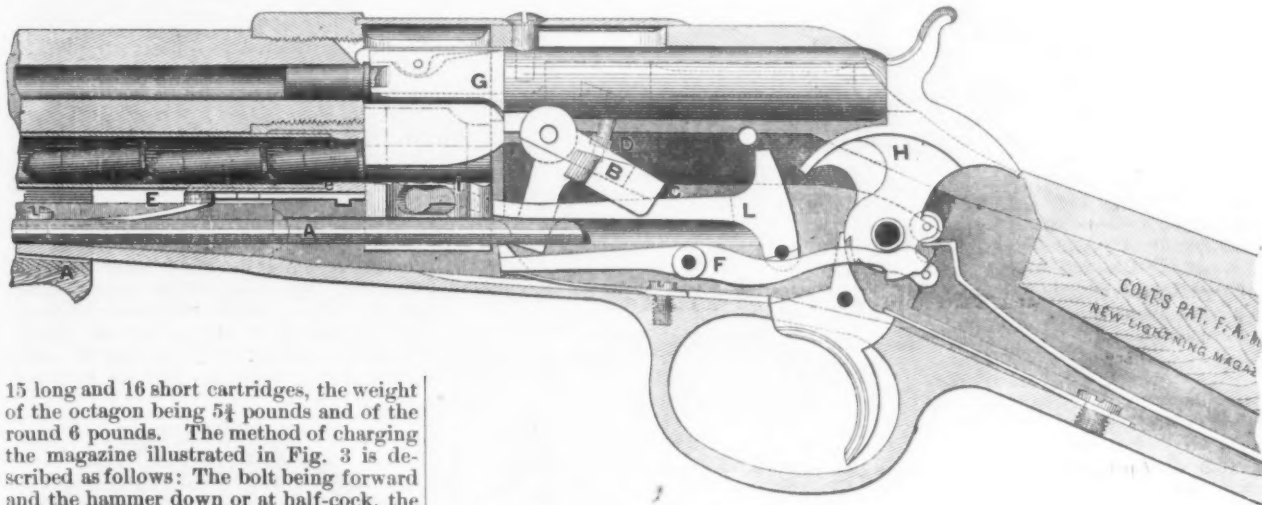


Fig. 2.—Sectional View of Rifle.

15 long and 16 short cartridges, the weight of the octagon being 5½ pounds and of the round 6 pounds. The method of charging the magazine illustrated in Fig. 3 is described as follows: The bolt being forward and the hammer down or at half-cock, the left side of the magazine block is pressed with the thumb of the left hand, throwing it to the right and exposing the mouth of the magazine. The cartridges are then placed in the magazine tube, as shown in the cut, each cartridge being pressed forward until its head is forward of and rests

spring E also serves to lock the slide A in its forward position when the magazine block e has been pushed out to the right for loading the magazine, and when the

in line with the chamber. The forward motion of the handle A pushes the bolt G forward, moves the cartridge into the chamber, locks the breech-bolt by



Fig. 3.—Charging the Magazine.

against the loading spring just in the rear of the magazine block. When a sufficient number of cartridges have been introduced the magazine block is pressed back to its place. The carrier I slides vertically, as shown in Fig.

block has been returned to its place the slide is unlocked. The action of the various parts of this rifle is the same as that of the similar parts in the other lightning magazine arms. The act of moving the handle A to the rear lifts the

the brace B, lowers the carrier and opens the magazine for the passage of another cartridge into the carrier. The rifle is then ready for firing. The automatic locking and unlocking of the hammer and the handle is new in this model, and is so

important that it has been applied to the other lightning models—viz., .44, .38 and .32. This rifle is referred to as possessing advantages in weight and caliber for small game and target practice, and the breech action, from its simplicity and perfect operation, is alluded to as making the rifle absolutely safe against accidental explosion, while the left-handed method of handling insures the easiest manipulation of the gun.

The patent set trigger, which is used in the lightning rifles—.32, .38 and .44 caliber—is represented in Fig. 4, from which its operation will be readily apprehended. The adjustment is by means of a small screw above where the finger presses the trigger.

A full description of the new lightning magazine rifles in the different calibers is given in the very complete catalogue issued

#### The Hotchkiss Lemon Squeezer and Meat Press.

Edward S. Hotchkiss, Bridgeport, Conn., for whom John H. Graham & Co., 113 Chambers street, New York, are agents, is putting on the market a new squeezer and press, which is shown in the accompanying illustration. It is fully designated as the Hotchkiss Straight Flush Lemon Squeezer and Meat Press. As represented in the cut, it rests on a wooden block, which is appropriately stained, the squeezer itself being finished in japan, with gold stripe. Attention is especially directed to the arrangement of the levers, by which a heavy pressure is brought to bear on the substance from which the juice is to be extracted. The cup in which the lemon or meat rests has a removable bottom,



The Hotchkiss Lemon Squeezer.

by the company, with a detailed explanation of the mechanism and copious illustrations. The trade will note with peculiar interest the important line of arms thus put on the market.

The Queen and Crescent route via the Alabama Great Southern and Cincinnati Southern railroads has issued tariff sheet No. 4, giving the rates on pig iron from Southern furnaces, which went into effect on May 1st. The rates are throughout 20 cents lower than those printed in *The Iron Age* of April 26th. To the rates thus made 35 cents must be added to the rates from Birmingham to reach the figures for Pulaski, Max Meadows, Crockett's, and Rural Retreat, Va.; 60 cents for Roanoke, Drapers', Reed Island, Allisonia, Barren Springs, Foster Palls, Austinville and Ivanhoe, Va., and 75 cents for Lynchburg, Va.

The Westinghouse Machine Company, of Pittsburgh, Pa., have sent us a number of small blue prints and particulars relating to their new automatic compound, single engines, both condensing and non-condensing. The engine in general appearance resembles the well-known form of the Standard Westinghouse engine, though there are some radical changes in design. The valve is of the piston type, as the old form, but works on top of the cylinders, at right angles to the motion of the piston, being arranged horizontally.

which permits the ready escape of the juice, as indicated in the cut. The size of the squeezer may be estimated from the following measurements: Length of block, 14 inches; extreme height of squeezer, 10½ inches; outside diameter of cup, 3½ inches. The thoroughness with which the juice is extracted and the moderate price at which the squeezer is sold are points on which special emphasis is laid by the manufacturer.

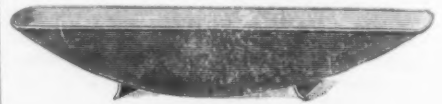
In answer to petitions of the iron manufacturers in the Schuylkill region to the Pennsylvania and Reading Railroad officials for a reduction of rates "so that they can successfully compete with other like manufacturers in the State," the Reading Railroad issued a circular making a reduction of 15 per cent. from present rates. The manufacturers requested a general cutting of 50 per cent., but the company absolutely refused to listen to the proposal. It is also stated that the Pennsylvania Railroad has made similar reductions in freight rates to iron manufacturers.

It is stated on good authority that the skilled employees of the North Chicago Rolling Mill Company, at Chicago, to the number of over 2000 have decided to leave the Knights of Labor and join the ranks of the Amalgamated Association. The men belonged to the latter organization several years ago, but drew out, as they believed they could better their condition by join-

ing the Knights of Labor. Since that time they have changed their opinion and are now anxious to join the old organization. Their request for admittance has been favorably received.

#### Sperry's Felloe Oiler.

D. K. Sperry & Co., Batavia, Ill., are manufacturing the felloe oiler represented in the accompanying illustration. It is a



Sperry's Felloe Oiler.

light cast-iron tank for treating the wheels of wagons with linseed oil, and is large enough to take in the hind wheels of a wide-tire farm wagon. If properly used it is stated that it will preserve wheels indefinitely, and will save its cost in tire setting the first season.

#### A New Tray.

The Palmer Mfg. Company, of New York, represented in Chicago by W. H. Sills, 86 Lake street, have just brought out a new embossed tray of handsome design and surprisingly low cost. It is made of white metal with a silver finish, and is known as the white "brilliant tray." The design is well shown in the following cut.

Notwithstanding its cheapness, this finish is stated to be quite durable, the coating retaining its luster after repeated washing. Specimens of the same coating on other goods, which have preserved their fine appearance for over a year, are shown by the company. The weight of these trays is the same as that of standard



White Brilliant Tray.

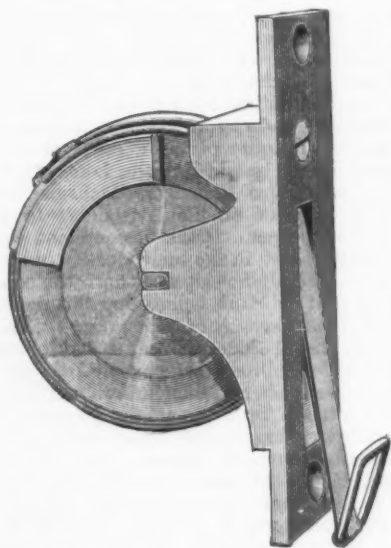
brass trays. They are made either round or square. The round trays are of three sizes, being 10, 12 and 14 inches in diameter.

The havoc wrought by the French mitrailleuse in the Franco-German war realized the promises made for it by the French War Minister Lebœuf, yet the only use made of the experience with the machine gun up to quite recently was to increase the number assigned to each brigade of infantry. Now, however, both Germans and French are practicing the cavalry in their use, in the wise belief that the next best thing after having a destructive arm is to get it quickly to work upon an unprepared enemy.



### The Andrus Sash Balance.

This article is made by the Andrus Mfg. Company, Rochester, N. Y., and is represented in the illustration given below. Its construction is clearly indicated in the cut, which shows its special features, with the brake by which the operation of the balance is regulated. It will be seen that by means of the screw on the face of the balance a brake is operated by which the tension of the spring can be regulated to carry sashes of various lengths and weights. This sash balance is made in 10 sizes, the No. 1 intended for sash weighing from 4 to 9 pounds and not exceeding 30 inches high, and the No. 10 for sash weighing 50 to 60 pounds. The point is made in regard to this article that it is no more expensive than weights and cords, and is much less expensive for heavy windows,



The Andrus Sash Balance.

while saving the large percentage in the cost of window frames. The fact that it is equally adapted to new or old windows is also mentioned

Steamship construction in British shipyards continues active since the revival noticed last autumn. The statistics show that there are now 302 steamers building of a total of 539,000 tons, compared with last year's figures at the time of 247 boats and 374,000 tons. The number of steamers has, therefore, increased by 55, or over 20 per cent., but the tonnage has been augmented in much greater ratio—viz., 155,000 tons, or, say, over 40 per cent. The tonnage completed during the past quarter is also much greater than last year. During the first three months in 1887 there were 15,000 tons launched, but from January to March this year no less than 142,000 tons have been added to the mercantile navy.

One of the latest novelties, just brought out in England, is glass-lined tubing, which is put on the market by a London firm. From particulars of tests which we have seen, it would seem that the tubing is satisfactory in every respect, and that rapid changes in temperature do not injuriously affect it. The tubing is especially recommended for domestic service, chemical works, breweries, and, in fact, all establishments where a non-corrosive pipe is required. The method of manufacture is not described.

Extraordinary terminal improvements in progress in South Brooklyn, comprising a large depot and a tunnel which will probably cost \$1,000,000, are being prosecuted

vigorously under the auspices of the same parties that have recently expended \$750,000 on new boats and buildings for the South Brooklyn Ferry Company.

### The Surprise Bath and Boiler Heater.

McCahan & Co., 8 North Central avenue, Baltimore, Md., are offering to the trade a device for heating baths and

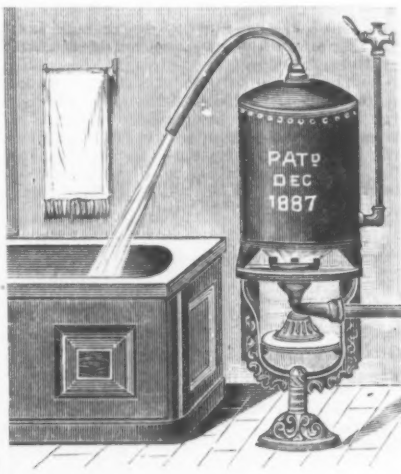


Fig. 1.—The Surprise Bath Heater.

which is also applicable, in another form, to supplying hot water by means of an ordinary range boiler. Fig. 1 illustrates the Surprise gas or gasoline bath heater as put up and in use. The capacity of this heater is 10 gallons, and it is described as a complete heater and bath boiler. As shown in the cut it is intended to be put alongside of the bathtub and connected to the cold-water spigot. The hot water as it issues from the top of the heater is

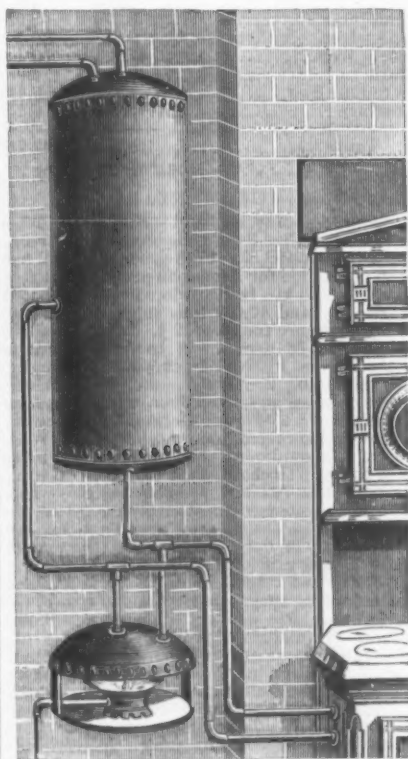


Fig. 2.—The Surprise Boiler Heater.

drawn into the tub through the goose-neck. Another way to arrange the device is to connect it permanently by pipes and have a hot-water spigot placed beside the cold one. It is adapted to either a gas stove or an aerated gasoline burner, as may be desired. A special point to which the

manufacturers refer is that it will fit over the hole of any stove, either coal or gas, or gasoline range. As it combines the elements of a water-back and boiler, it may be connected to the house pipes, made to deliver hot water where desired, and requires no more attention than the ordinary bath boiler. The boiler part is made of mild steel and is tested to 150 pounds pressure. The makers inform us that they have already sold a number of these articles and that they are giving excellent satisfaction wherever used. As to the cost of running the device, it is stated that it consumes but 6 feet of gas per hour, which, at \$1.50 per thousand, would be less than 1 cent per hour for fuel. The second application of the device, as shown in Fig. 2, is to an ordinary range boiler. The general features of it are the same as in the previous case, though the water-heating part is of a different shape. The illustration shows the method of connecting pipes, as well as the position of the heater. The manufacturers state that it can be easily put up, and refer to the advantages which it possesses in not taking up any floor room or needing any stop-cocks.

### Remitting by Check.

The following suggestions regarding the remittance of checks in payment of accounts will, no doubt, be of interest to a large class of our readers, and an observance of the points mentioned will tend to prevent many annoyances which might otherwise arise in the conduct of business:

When a person remits checks instead of money he should never fail to put his indorsement on the back of them all, stating also to whose order they shall be paid. This should be done even on checks that are made out to "bearer." It should be remembered that checks are sent in lieu of money, and no indorsement can make them better than money. If not indorsed over to some one, as above directed, they are as unsafe to transmit as money, as whoever gets hold of them can cash them, and if they arrive safely at their destination the name of the sender has to be pinned to them until cashed at bank, otherwise serious complications would occur.

The following, also, should not be overlooked. In purchasing a bank draft, Smith should have the same made out to his own order, and not to the order of Jones, to whom it is to be sent. He should then indorse the draft on the back: Pay to Jones or order, Smith. If the draft is then lost in the mails, duplicate can be procured without trouble; but, if it had been made to the order of Jones, the finder would have good opportunities to cash it, and in all cases of flagrant carelessness the law says the loss must be borne by the careless one. If a depositor uses ordinary caution in his business with his bank, and his check is forged or the amount raised, the loss falls upon the bank.

The holder of a note or check may give notice of protest, either to all the previous indorsers or only to one of them; in case of the latter, he must select the last indorser, and the last must give notice to the last before him, and so on. Each indorser must send notice the same day or following. Neither Sunday nor legal holiday is to be counted in reckoning the time in which notice is to be given.

Frank H. Woodruff and Vandenburg B. Chevalier, iron and steel dealers, as Frank H. Woodruff, at No. 28 West street, and as Frank H. Woodruff & Co., at Nos. 519 to 523 East Nineteenth street, made an assignment on Monday to Herman J. Tenney.

## Foreign Markets.

## EQUIVALENTS.

	Cents.
Franc, Peseta or Lira.....	19.3
Florin (Netherlands).....	30.2
Florin (Austria).....	35.9
Milreis (Portugal).....	54.8
Milreis (Brazil).....	23.8
Mark (Germany).....	220.5
Kilogram.....	134.
Picul.....	

## WEST INDIES.

PORT OF SPAIN, TRINIDAD, April 13, 1888.—*Asphaltum*.—There has been a steady export demand at firm rates. Boiled selling at \$14.04 per ton and Crude at \$6.84, including export duty. Shipments since January 1 sum up the large amount of 16,339 tons, as compared with 5140 last year and 6970 in 1886. *Exchange*, 90 days' sight, on London, ranges between \$4.74 and \$4.80.—*E. P. Masson*.

## CHILI.

VALPARAISO, March 17, 1888.—*Copper*.—The cholera continues and miners are scarce, hence mine-owners and smelters are averse to making contracts for forward delivery; besides, smelters have sold all they are able to turn out till June 1 next. Negotiations between producers and the French syndicate continue; the former do not seem anxious to conclude anything. Sales during the fortnight have not exceeded 10,678 tons, at \$29.50 @ \$30.20 per quintal, f.o.b., and \$30.30 on shore; \$30.50 equals \$77. 1/4. *Nitrate*.—Has been flat, European cable news not being encouraging, while there is a scarcity of suitable ships' room. Sales have been restricted during the fortnight to 182,000 quintals, at \$2.52 1/2 for 95%. July sail would readily bring \$2.62 1/2, but producers decline to sell that much ahead. In February, 445,804 quintals were exported, of which 135,038 to the United States on the Atlantic, and there remained loading 942,880 quintals. Comparative statement of shipments during the first two months:

	1886. Quin- tals.	1887. Quin- tals.	1888. Quin- tals.
To Northern Eu- rope .....	674,473	1,296,966	1,527,875
To the Mediter- ranean .....		38,508	41,916
To the United States on the Atlantic .....	105,615	164,666	301,870
To the United States on the Pacific .....	66,713	31,000	32,850
Totals .....	849,801	1,531,132	1,903,827

Charters during the fortnight amounted to 18,800 tons for Europe and 5800 tons to the United States. *Coal*.—Domestic is extremely scarce, so that 50/ has had to be paid for Cardiff and 45/ for Orrell; February sail West Hartley brought 38/; March and April Australian, 36/, and for April sail West Hartley 38/ is asked. *Exchange*.—Has been tolerably steady at 26d. @ 26 1/4 d., 90 days' sight, on London.—*Weber & Co*

## EAST INDIES.

SINGAPORE, May 15, 1888.—*Tin*.—No shipments were made to the United States from the Straits Settlements during the fortnight, against 200 tons last year; to England they amounted to 800 tons, against 300. Since January 1 650 tons were shipped to the former, against 1900 in 1887, and 9700 to the latter, against 4800.—*Gilfillan, Wood & Co., to Chas. Nordhaus, New York, per cable*.

PENANG, April 5, 1888.—*Tin*.—Business has been dull generally during the fortnight. Receipts of Tin amounted to 8000 piculs, Europeans taking thereof 3300 piculs and Chinese 2500. An advance took place from \$54.72 to \$56, followed by a decline to \$51.75, closing at \$51.80.—*Schmidt, Kustermann & Co.*

SINGAPORE, April 11, 1888.—*Petroleum*.—Batoum Oil is more crude than the product of Pennsylvania wells, but for burning in lamps it is practically quite as good. At first the native dealer, conservative in all his instincts, hesitated to take the Russian Oil instead of the American, to which he had become accustomed. But the greater cheapness of the cruder Oil has brought about a wide use, and the doubt thrown on American Oil by the unfortunate shipments of an adulterated article to Calcutta seems to have given the advantage to the Russian Oil.—*Straits Times*

## SPAIN.

BILBAO, April 28, 1888.—*Iron Ore*.—The demand has been slack; sales have been confined to a few single cargoes at irregular prices, some inferior Rubios being shaded somewhat. We quote: Campanil, 7/ @ 7/3, and Rubios, 7/ @ 7/3. Shipments have been rather active, amounting to 85,200 tons; they sum up, since January 1, 1,260,645 tons, as compared with 1,491,208 tons last year. *Pig Iron*.—Exporta-

tion has reached 6400 tons, against 375 taken for domestic consumption. The Vizcaya Company quotes Nos. 1 to 3, f.o.b. at Bilbao, 60 pesetas per ton, and Nos. 4 to 7, 57; on contracts for the year, 58 @ 55 respectively, and Lingotillo at Huelva or Seville, 65 pesetas.—*Bilbao Maritimo y Comercial*.

## BELGIUM.

BRUSSELS, May 12, 1888.—*Iron*.—A decidedly better feeling has obtained in the Belgian iron markets during the week, Charleroi in particular receiving large orders, and the full prices insisted upon have been submitted to without hesitation. As the season has been backward the demand now manifesting itself both for home use and export is all the larger and more urgent, the opening of navigation in Northern Europe has stimulated the dealings to a considerable extent. There is every indication that the brisker times now setting in will hold good for the summer, and it is safe to say that no abatement in prevailing rates will take place, at least not in Finished Iron. The Pig Iron quotation at Charleroi remains steady at 5.30 @ 5.50, while Beams remain 11.50 @ 12 francs at the works:

Statistics for the first quarter compare as follows:

	1888. Tons.	1887. Tons.
Iron Ore .....	889,033	316,816
Ingot Steel .....	424	52
Steel Rails .....	88	53
Other Rolled Steel .....	603	536
Other Steel Manufactures .....	67	86
Pig Iron .....	52,735	28,216
Scrap Iron .....	5,769	3,817
Iron Wire .....	922	993
Iron Rails .....	68	27
Sheet Iron .....	450	342
Other Iron .....	1,853	1,001
Nails .....	135	195
Wrought Iron .....	948	892
Castings .....	172	169
Totals .....	453,247	353,225
	1888. Tons.	1887. Tons.
Iron Ore .....	32,736	33,725
Ingot Steel .....	2,413	387
Steel Rails .....	10,154	13,290
Other Rolled Steel .....	7,508	5,743
Other Steel Manufactures .....	516	272
Pig Iron .....	3,185	3,178
Scrap Iron .....	268	5,059
Iron Wire .....	1,009	1,671
Iron Rails .....	3,170	5,029
Sheet Iron .....	9,837	10,502
Other Iron .....	47,926	53,444
Nails .....	2,629	2,057
Wrought Iron .....	4,722	5,445
Castings .....	2,938	3,177
Totals .....	129,015	142,919

—*Moniteur Industriel*.

## GERMANY.

HAMBURG, May 12, 1888.—*Iron*.—The Rhenish-Westphalian Iron trade has been reviving. Quite a demand for high-grade Spiegel has been noticeable for American account, a lot of 20,000 tons 20 @ 1/2 being ordered to be executed at Siegen, and 10,000 tons more to follow at once, the figure for 10 @ 12 1/2. Manganese remains 58 @ 59 marks. A temporary lull is noticeable in Forge Pig at 50 @ 51, Foundry Pig remaining firm at 51 @ 58. Thomas is in active request at 45 and over, while Bessemer is sustained at 54 @ 55, German and English at 43/6 @ 46, mixed lots, f.o.b. on the West Coast. Luxembourg has not varied from 38.60 to 39. Merchant Iron has been looking up but little latterly, although a few works seem to be somewhat busier, but prices obtained are unsatisfactory, specifications are not coming in very readily, and the export trade is insignificant. Rolling mills turning out Plates and Sheets continue booked to the full extent of their capacity and insist on six weeks' time for delivery of any new commands. The margin of profit is not very great, although prices are fully sustained. Thin Sheets form an exception and pay makers better for the time being. Both foundries and machine shops have got plenty of work, their profits are nevertheless moderate. The Car-makers have ceased complaining since late adjudications gave them work enough for the summer months. Metals have not yet returned to a settled condition, the tendency still remains, if anything, downward. Prices are nominal, few actual dealings transpire beyond a small jobbing trade.—*Borsenhalle*.

The Tudor Iron Works, of St. Louis, manufacturers of steel and wire nails, rail fastenings, &c., have sent out a handsome card showing an engraving of their works.

## Iron Making at Pineville, Ky.

The Pine Mountain Iron and Coal Company, of Louisville, Ky., have issued a very handsome little brochure of 64 pages, descriptive of their property near Pineville, Bell County, in the southeastern part of the same State. In it they claim, among other matters of great interest, that early in the present year a vein of Oriskany ore was uncovered on their property 20 feet 6 inches thick, and which grew thicker as it was followed into the mountain side to a depth of 50 feet. Openings were made at other points on the same horizon a considerable distance away with as good results. This ore has been identified with the brown ore successfully worked at the Lowmoor, Longdale and other furnaces in Virginia. It is stated that 1/2 mile from the ore a coking coal of fine quality has been discovered, and in the same mountains, 300 feet above, is a deposit of pure carboniferous limestone. The conditions thus appear to exist at this point for the very cheap production of pig iron. A branch of the Louisville and Nashville Railroad has been completed to Pineville, and by this route, at present rates of freight, pig iron made at that point could be laid down in Louisville \$1 per ton cheaper than from Alabama, and in Chicago or St. Louis from \$1 to \$2 per ton cheaper. Other iron ore and coal deposits exist in the same locality, which have awaited development until the completion of railroads connecting this region with other sections of the country. This is now being done. The Louisville and Nashville Railroad have opened the way and other lines will soon follow, until the rich mineral territory at the junction of Kentucky, Virginia and Tennessee is made accessible from all points. At Cumberland Gap, 14 miles south of Pineville, a railroad tunnel is now being pierced, which will form a gateway between the South Atlantic States and the Ohio and Mississippi valleys. This tunnel is to be completed within 20 months from February 1, 1888, according to the terms of the contract, and the Louisville and Nashville Railroad will then effect a junction by its means with the Knoxville and Powell's Valley Railroad, also under construction. A route has been surveyed under the auspices of the Louisville and Nashville Railroad for a line to connect with the Norfolk and Western. Several other railroad lines of more or less importance are projected through this territory, and all of them will be obliged by the peculiar conformation of the country to pass through or near Pineville. The occasion is sought by the managers of the Pine Mountain Iron and Coal Company to establish an important center of population at Pineville for the purpose of developing their interests. They announce an auction sale of lots on the 23d inst., to continue three days, for which a special excursion train will leave Louisville on the 22d inst., by the Louisville and Nashville route. Several maps accompany the pamphlet from which these statements are taken, well-executed illustrations are given of points of interest in the vicinity of Pineville, as well as of buildings just completed or under construction, and it is replete with technical and other information which will be found of great interest by those who are giving attention to the promising question of development of Southern resources.

Export statistics since the opening of the Canadian Pacific Railroad are misleading, large amounts of merchandise leaving the country through that route being wholly unaccounted for, and the bureau at Washington is seeking a remedy. The railroads crossing the Canadian and Mexican borders have been appealed to for statistics with only partial success.



# TRADE REPORT.

## Philadelphia.

Office of *The Iron Age*, 220 South Fourth St.,  
PHILADELPHIA, PA., May 22, 1888.

**Pig Iron.**—The market is quite as much unsettled as it was a week ago, when the Thomas Iron Company announced their reduction in prices. Less business has been done than during any single week since the first of the year. All who can get along without buying are doing so, the lower quotations being no inducement, while the present feeling of uncertainty continues. In addition to that, there is positively nothing in sight likely to bring about any immediate reaction, so that consumers feel that while there is nothing to be gained by placing orders at once, they may secure certain advantages by waiting, and, besides that, few (if any) of the Pennsylvania Companies are willing to meet the quotations made by the Thomas Company. The consequence is that producers and consumers alike are completely bewildered, and as yet are not decided what steps to take. Some of the best brands will be held for the present at prices varying from \$19 to \$19.50 at tide for No. 1 Foundry. The makers say first, that they cannot get their own money back at less than these figures—second, that they have no Iron on hand; third, that many consumers want these particular brands; and, fourth, that in any case their brands are worth all the difference claimed. Those who occupy a less secure position, owing to the comparative newness of their brands, or who, for other reasons, have been quietly supplying the market at what was regarded as specially low prices, are somewhat undecided what to do. To get back to their relative positions it would be necessary to quote No. 1 at about \$17 or \$17.50, which, of course, cannot be done at present. The idea with some of these people is to let the Thomas sell all they want to sell at their own prices, which cannot be very much if their statements as to the orders taken early in the season are to be relied upon. Then they propose to take up the trade again at probably \$18.50 @ 19, which they think can be done soon as the Thomas Company are filled up. There are, others, however—and we state this on the authority of Mr. John W. Hoffman, manager of the Rising Fawn and Chattanooga companies, who say that they also are here to stay, and that they intend to sell Iron in this and other Eastern markets at figures which will make it as desirable as any other Iron that may be placed in competition with it. These various statements cover pretty much the entire field, and represent four different classes—viz., first, the Thomas Company, whose prices have been made public, who are supposed to have very little No. 1 for sale; second, Pennsylvania companies who have special brands and connections, and who will demand \$19 @ \$19.50 and upward; third, sellers of Western Pennsylvania, Virginia and Ohio brands, who are disposed to wait rather than quote below \$18.50 @ \$19, and fourth, Southern brands, some of which are for sale at whatever price the market will legitimately afford. General quotations may be given about as follows for tidewater deliveries: No. 1 Foundry \$18 @ \$20; No. 2 do., \$17 @ \$18; Gray Forge, \$16 @ \$16.50. Southern Iron, delivered ex-ship, No. 1 Foundry, \$17 @ \$17.50; No. 2, do., \$16 @ \$16.50; Gray Forge, \$15 @ \$15.50.

**Foreign Iron.**—There is no business to report in either Bessemer or Spiegel, prices being entirely too high to permit of operations in the American market. Asking

prices are about \$19.50 @ \$19.75 for Bessemer, and \$26.50 @ \$27 for 20 % Spiegel.

**Blooms.**—Prices are almost nominal, although there is a good deal doing in Steel, but chiefly in small lots direct from mills. Prices are about as follows (but on large lots special efforts would be made to secure the order): Domestic Rail Blooms, \$28 @ \$28.50, Slabs and Billets from \$30 to \$35, f.o.b. cars at mill, according to analysis; Charcoal Blooms, \$52 @ \$54; Run-out Anthracite \$43 @ \$44; Scrap Blooms, \$35 @ \$37 per "bloom" ton of 2464 lb. Foreign at tide, c.i.f., duty paid, \$30 @ \$31 for Nail Slabs; \$31.50 @ \$32.50 for 4 x 4 Billets, and \$35 @ \$39 for Siemens-Martin, price according to analysis, &c.

**Muck Bars.**—The market is dull and lower. Special qualities are wanted at about \$28 delivered, but sellers ask from \$27 to \$28 at mill, according to delivery, quality, &c.

**Bar Iron.**—There is very little change to note since last week. The demand is not large, although if prices were reasonably good there might be less room for complaints, but with only part employment, and prices constantly drooping, it is a difficult matter to get out whole. Hopes are entertained of somewhat cheaper material, which, with a trifle more business, would help to make the position a little more tolerable, but there is really not much foundation for expecting better things at present. As in Pig Iron, cheaper cost would probably be just so much more to be given away in competition, so that the outlook is not particularly bright. Prices are supposed to be 1.9¢, but 1.8¢ @ 1.85¢ is nearer the actual selling price, with still lower figures on large orders. As a matter of fact, there are no established prices—all depends on the kind of order, the amount of competition, &c. Skelp Iron did look a little better, but for some reason or other buyers seem to think 1.75¢ is all they need pay for Grooved Skelp, which for the present sellers decline to meet. It is intimated, however, that both Bars and Skelp would be taken in large quantities at about 1.75¢, but if material is actually required a few cents per 100 lb will not be likely to keep them out of the market.

**Plate and Tank Iron.**—A shade more activity is reported in small lots, but the aggregate amount of business placed is not important. Manufacturers have an impression that there is a good deal of business near at hand, but it develops slowly, while in the meantime prices are being cut very close. For ordinary sized lots prices are about as follows: Ordinary Plate, 1.90¢ @ 2¢; Tank, 2¢ @ 2.10¢; Shell, 2.4¢ @ 2.5¢; Flange, 3.5¢; Fire-Box, 4¢; Steel Plates, Tank and Ship Plate, 2.3¢ @ 2.4¢; Shell, 2.7¢; Flange, 3¢ @ 3½¢; Fire-Box, 3½¢ @ 4½¢.

**Structural Iron.**—There has been but little business given out lately apart from the lots mentioned last week, and some of the mills are getting rather short of orders. More business is said to be near at hand, however, although in the meantime competition is unusually sharp on everything that is offered. Prices are weak and irregular at the following figures asked: 2.05¢ @ 2.10¢ for Bridge Plate; 2¢ @ 2.10¢ for Angles; 2.6¢ @ 2.7¢ for Tees, and 3.3¢ for Beams and Channels, Iron or Steel.

**Sheet Iron.**—The demand has been very slow for some time past, and prices are weak and irregular, especially on inferior qualities. Galvanized is also easier to buy, with quotations varying according to size of order, &c. In a general way small lots are quoted about as follows: Best Refined, Nos. 26, 27 and 28... 3¼¢ @ 3½¢; Best Refined, Nos. 18 to 25... 3¢ @ 3¼¢; Common, ¼¢ less than the above.

Best Bloom Sheets, Nos. 26 to 28... 4¼¢ @ 4½¢; Best Bloom Sheets, Nos. 22 to 25... 4¢ @ 4¼¢; Best Bloom Sheets, Nos. 16 to 21... 3½¢ @ 3¾¢; Blue Annealed... 2.8¢ @ 3¢; Best Bloom, Galvanized, discount... 62½¢; Common, discount... 67½¢.

**Steel Rails.**—The Eastern mills having filled their allotments are practically out of the market for the present. There is very little inquiry, however, so that it makes but little difference, so far as actual business is concerned. A few small orders are received from week to week on which quotations are said to be from \$31 to \$31.50 at mill, but relatively lower figures are quoted by the Western mills.

**Old Rails.**—Dull and hard to sell, unless to parties in actual need of supplies. Stocks are light, however, and store lots of T's are held at \$22, but a cargo of 600 tons now in port has been offered at \$21 without finding a buyer, so that quotations for the present are rather one-sided.

**Scrap Iron.**—Business is extremely quiet and sales are almost exclusively in small lots. Prices about as follows in ordinary transactions: \$19.50 @ \$20.50, asked, for shipments of cargo lots; \$20 @ \$21 for carload lots, delivered, or for choice \$21.50 @ \$22; No. 2 do., \$14 @ \$15; Turnings, \$13 @ \$14; Old Steel Rails, \$19 @ \$20; Cast Scrap, \$14 @ \$15; do. Borings, \$9 @ \$10; Old Fish Plates, \$25 @ \$26. Old Car-Wheels, \$17 @ \$18, Philadelphia, or its equivalent.

**Wrought-Iron Pipe.**—A fair business is being transacted in small lots, and as mills have been working steadily since the first of the year stocks have accumulated, and to make sales of round lots concessions are made. Discounts are nominally as follows: Black Butt-Welded, 50 %; on Galvanized do., 45 %; on Black Lap-Welded, 65 %; on Galvanized do., 50 %; Boiler Tubes, 60 %.

**Nails.**—The market shows very little activity, and sales are running behind the corresponding period of last year. Mills, however, are working only about half time, so that the evil of overproduction is to some extent avoided. Price is quoted for small lots from store at from \$2 to \$2.05, with the usual discounts for carload lots.

J. Wesley Pullman, of 238 South Third street, telegraphs us that he has withdrawn quotations on Minnesota Bessemer Ore.

## Chattanooga.

Office of *The Iron Age*, Ninth and Carter Sts.,  
CHATTANOOGA, TENN., May 21, 1888.

**Pig Iron.**—Notwithstanding the tendency of prices downward it is a fact that most of the Southern furnaces are under contracts to such an extent that large round lots could not be bargained for at the prices that are now ruling. Southern output is evidently finding a market somewhere, and at the present time there are very little desirable grades in stock at any of the yards. So far there are no intimations from any of the producers that they will blow out if Iron goes any lower, but, on the contrary, new stacks are being blown in, those yet uncompleted are getting ready to commence operations as fast as possible, and of those that are running wherever weak points in their construction are discovered they are at once put under repairs with a view of working them up to their fullest capacity. To all this may be added the fact that there are those who are strongly entertaining the idea of putting their money into the erection of new plants. At present it is impossible to give a correct quotation of prices. Much depends upon the reputation of the furnace and upon the grades. No. 1 Foundry has been sold in small lots as low as \$14.50 at the furnace, while sales have been made as high as \$16.50 for

favorite brands, and the yards have been kept clean at these figures. Of the new stocks just blown in there has not yet been sufficient put on the market to establish a reputation, but the price will probably differ but very little from what has been marketed from the South for a number of years. The question of fuel for the Southern furnaces is yet an unsolved problem. The Pierce process of making charcoal, under which the Nashville stacks are running, will help out a little, and as long as timber lasts may be relied upon, but of Coke there is still a hand-to-mouth continuance that is a grievous drawback to the Southern Pig Iron producer.

**Miscellaneous.**—The 29th of this month will witness a very interesting feature in the history of this particular district. It is the opening of the Broad Gauge Railroad running from this city to the top of Lookout Mountain, and passenger cars can then be run from any section of the United States through to that point without any change or transfer of occupants. The Queen and Crescent Line have issued circulars that they, together with associated roads, will sell on the 27th, 28th and 29th excursion tickets at the rate of 1¢ per mile over their respective lines, taking their passengers through without change to the extreme summit of the mountain. Tickets good to return until June 2.

## Chicago.

Office of The Iron Age, 95 and 97 Washington St.,  
CHICAGO, May 21, 1888.

**Pig Iron.**—Dealers and manufacturers who had neatly figured out that prices could not go much lower on account of the near approach to the cost of production met with some startling facts against their judgment during the past week. As usual when extreme low prices are made, the sale is credited to a weak furnace whose necessity dictated the action. But whether this be so or not it does not alter the fact that Southern Charcoal and Ohio Soft Irons were sold in this market at figures almost as low as the lowest price named in 1886. There can be no advantage gained for the producer by forcing sales through cut prices, except that the sooner rock bottom is reached the sooner will come the reaction. All grades of Iron feel the shock of such transactions and increase the diffidence of buyers in taking hold. Lake Superior Charcoal and Lake Superior Coke Irons are in slightly better demand in car lots, with an increased number of inquiries for 50 and 100 ton lots. The disposition of some furnaces to blow out, and the refusal of others to sell at less than present quotations, is an argument in favor of buying enough Iron to cover contracts in hand. The amount of work contracted for by general foundries has increased considerably in the last few weeks, and in all lines except architectural shapes a fairly good summer's work seems assured. Were it not for this improved outlook the effect upon the market of the low prices made here on Ohio and Southern Iron and Anthracite Iron in the East would have been much greater. As it is, we find it necessary to reduce our quotations an average of 50¢ a ton on carload lots, f.o.b. Chicago. We quote Lake Superior Charcoal, all numbers, \$20; Alabama Car Wheel, \$26; Southern Charcoal Foundry, \$18.50 @ \$19; Jackson County Softeners, No. 1, and Hocking Valley, Soft Foundry, No. 1, \$18.50; American Scotch, No. 1, \$17.50; other Ohio Scotch Irons, \$18 @ \$18.50; Lake Superior Coke, No. 1, \$18; No. 2, \$17; No. 3, \$16.25; Southern Coke, No. 2, \$17; No. 2½ and Open Bright, \$16.50 @ \$17; No. 3, \$16; No. 1 Mill, \$15.50 @ \$16; No. 2 Mill, \$15.

**Bar Iron.**—The range of prices continues to increase. Refined Iron is held pretty firmly at 2¢, in round lots, while good Common Iron is quoted at 1.65¢ for desirable specifications. There is still another grade not recognized by any particular name, in which the market is especially weak. How much worse this Iron is in quality will be hard to determine, but it is surely being used for a scapegoat on which to saddle some very low prices. Sales of small lots to several hundred tons have cropped out and it looks very much as if this "very bad" Iron was the most sought after. The demand, though not brisk, keeps the jobbers well engaged. Manufacturers are quite willing to accept orders for delivery previous to July 1, but offer no inducements for anything after that date. Store prices on small lots range from 1.80¢ to 2.10¢, according to quality.

**Structural Iron.**—Trade has not opened up to any extent in this branch, which, in a measure, is accounted for by the bad weather and the backward season. Architects report some improvement in the number of applications for plans and estimates for buildings, but comparatively few contracts have been closed. Founders making a specialty of this class of work are looking for orders, and, in some cases, making arrangements to have on hand a supply of stock sizes of Beams. Prices from store are: Angles, 2.40¢ @ 2.70¢; Tees, 2.60¢ @ 2.90¢; Beams and Channels, 3.80¢. Mill prices for carload lots, f.o.b. Chicago, are: Angles, 2.25¢ @ 2.30¢; Universal Plates, 2.35¢; Tees, 2.55¢ @ 2.60¢; Beams, 3.40¢.

**Sheet Iron.**—Barring some round lots wanted by jobbers the demand for Black Sheets is light. Roofing makers laid in their stock some time back, and for other purposes there is but little inquiry. Manufacturers who would accept orders for delivery previous to July 1 are quoting 2.90¢ for No. 27, f.o.b. Chicago. Jobbers quote on Common 3.20¢ for No. 27, and on Best Refined, 3.30¢.

**Galvanized Iron.**—The demand so far this month was larger for small lots. The aggregate business foots up fully as well as for the previous month. Prices, in sympathy with other Irons, are weakening. From store, in small lots, Juniata is quoted at 60 and 5 % off, and Charcoal at 60 and 10 % off.

**Car Axles.**—The demand for Car Axles is reported very fair. At a meeting of the manufacturers last week the price on Scrap Axles was reduced from 2.20¢ to 2.10¢ @ cwt. Muck Axles are quoted at 2.50¢ @ 2.75¢.

**Merchant Steel.**—A quiet, steady market defines the situation. Now and then jobbers enjoy a spurt of lively trade but they complain that they have not had any lately and are not likely to have until the Agricultural Implement makers commence buying. Store quotations are unchanged as follows: Bessemer Bars, 2.45¢; Tool Steel, 8½¢ @ 9½¢; Specials, 13¢ @ 25¢; Crucible Spring, 4.65¢; Open-Hearth Spring, 2.90¢; Open-Hearth Machinery, 2.75¢ @ 3¢; Crucible Sheet Steel, 7¢ @ 11¢.

**Steel Rails.**—Contracts for lots ranging up to 3000 tons were placed during the week. Reports regarding large blocks that were in the market are circulated but cannot be traced to a responsible head. Railroads are buying such supplies as are actually necessary and are not inclined to anticipate their wants in Rails. Makers continue to quote \$33 at mill.

**Old Rails and Wheels.**—The demand for Old Rails at present prices is light; there are buyers in the market who would take a limited amount of stock at about \$18.50. Sellers are asking \$19.50 @ \$20, some sales having been made during the

last week at the latter figure. There appears to be an improved demand for Car Wheels, but the price asked is about 50¢ @ ton above what buyers are willing to pay. No sales are reported, and a nominal quotation would be about \$19 @ \$19.50.

**Crop Ends.**—Considerable inquiry has sprung up lately for this class of Scrap. Makers are asking \$25 @ gross ton for selected, though it is probable that running contract can be made for less than this figure.

**Scrap Iron.**—The accumulations of Scrap lately have been pretty large; dealers' yards are being filled up very rapidly, and some anxiety is shown to make sales. Prices offered for Mixed Country Scrap range from \$12 to \$12.50. Selling quotations for carefully selected are as follows @ ton of 2000 lb: Railroad Shop or No. 1 Forge, \$18 @ \$18.50; Track, \$17; No. 1 Mill, \$13.50; Light Wrought, \$8.50 @ \$9; Horseshoes, \$18; Axles, \$23; Machinery, Cast, \$13.50; Stove Plate, \$10.50; Cast Borings, \$8.50 @ \$9; Wrought Turnings, \$11.50; Axle Turnings, \$12.50; Coil Steel, \$13; Leaf Steel, \$15; Locomotive Tires, \$15.

**Nails.**—The market has a strong tendency to lower prices caused by forced sales on the part of a few manufacturers whose affairs had become badly involved. Round lots of Steel Nails have been offered in this market a shade less than former quotations without catching any large orders. Makers' regular price for car lots f.o.b. Chicago is \$1.95, which could probably be shaded on an order for 5000 kegs. The demand from store is not heavy for the season. On small lots jobbers quote \$2.10.

**General Hardware.**—There has been a gradual falling off in the demand for all lines of goods in the past week, except for such specialties as Lawn Mowers, Scythes, Snaths, Sprinklers, &c. Jobbers, however, were kept pretty busy with mixed orders for stocking up broken lines of Shelf Goods. Carpenters' Tools and Blacksmiths' supplies, Carriage and Wagon Wood Stock are in good demand. Steady prices and fair collections are reported from all sources.

**Barb Wire.**—Some of the manufacturers find great difficulty in keeping up with their demand. One concern reports that they are from four to six weeks behind their orders. Others are seeking a market for stock on hand. For some time past prices have been pretty steady, but a recent cut made by Southern manufacturers is about to be used by a manufacturer in the northern part of Illinois as a basis on which to make a fight. Circulars have been issued by a certain concern stating that they intended to put all manufacturers on an equality on the price of Wire. It is already felt to the extent of bringing the quotation on Painted Wire down to 3.10¢ @ 3.15¢, and Galvanized to 3.85¢ @ 3.90¢. It is said that country buyers have been pretty well supplied for the early season's trade and jobbers have on hand very light stocks, so that should the market become greatly demoralized no one will be seriously hurt. At present further developments are being awaited by jobbers with some anxiety as to the ultimate result.

The North Chicago Rolling Mill Company began rolling Steel Beams at their North Chicago mill on Monday last. They started on 6-inch and made a very creditable output for a new undertaking. The claim that they will make none but the best is well substantiated by the sections exhibited at the office. This week they will work on 8-inch and perhaps 10-inch, and so on until they have a full assortment of sizes.



## Cleveland.

CLEVELAND, May 21, 1888.

**Iron Ore.**—About 35,000 tons of new Ore have been received at this harbor and about 25,000 tons at the other Lake Erie ports. Careful estimates place the amount of old Ore on the docks at the opening of navigation at 675,000 tons. The average amount left over during the past ten years has been about 300,000 tons, the excess this year being due to the scarcity of cars during the winter and to the fact that the furnaces have not required a great amount of Ore to carry on their work. Of the old Ore on the docks probably 175,000 tons remain unsold. It was brought down at last season's high freight rates and must, of course, be sold at a sacrifice. About 150,000 tons of Lake Angeline Ore have been sold at a price believed to be equivalent to \$6.25, f.o.b. vessels at Cleveland. Additional sales of Republic Ore, Cleveland delivery, are reported at \$6 and the Isabella Furnace is said to have purchased 50,000 tons of Menominee Bessemer Ore at \$5. The price paid for 40,000 tons of Gogebic Ore from the Pabst Mine cannot be learned, but furnacemen are adhering to their purpose to pay no more than \$5 7/8 ton for Gogebic Bessemer. They seem justified in this offer by the fact that while these ores sold last year for from \$5.50 to \$6 7/8 ton, the cost of delivering the Ore at Cleveland was \$1.50 7/8 ton greater than this season. Sales of Ore for the past week have been confined principally to 5000 and 10,000 ton lots, the Ore coming principally from the Champion, Lake Superior, Pabst, Chapin, Colby and Republic mines at prices hitherto given. Sales of Vermillion Ore aggregating probably 25,000 tons, are reported at \$5.75 and some Menominee Ore, not very high in phosphorus, at \$4.80. Business in non-Bessemer ores is improving, several fair sales having occurred at \$4. A sale of non-Bessemer Hematites was rumored this week, at \$3.70, but investigation proved this to be the furnaceman's offer. The dealer named a price for the Ore at the mine, which was computed to mean \$3.85 f.o.b. vessels Cleveland. Selling figures remain about as given last week, the following quotations being f.o.b. vessels lower lake ports:

No. 1 Specular and Magnetic Ores, Bessemer quality.....	\$6.00 @	....
No. 1 Specular and Magnetic Ores, Non-Bessemer quality.....	5.25 @	....
Red Hematite Ores, Bessemer quality.....	5.00 @	....
Red Hematite Ores, Non-Bessemer quality.....	3.75 @	\$4.00
Menominee Range Ores, Bessemer quality.....	4.75 @	5.00
Menominee Range Ores, Non-Bessemer quality.....	4.00 @	....
Gogebic Range Ores, Bessemer quality.....	4.75 @	5.25

**Pig Iron.**—There is little, if any, improvement in the situation, so far as actual transactions are concerned, although buyers are certainly manifesting more confidence in the market. This might reasonably be expected to bring about sales of substantial dimensions, but none are reported. Buyers and sellers unite in prophesying a good buying movement early in June. There is still some inquiry for fair lots of No. 1 Foundry and a few sales have occurred at \$17.85 @ \$18.35. For No. 1 Gray Forge Red Short Iron \$16.35 @ \$17.35 is quoted, and for No. 1 American Scotch, Black Band, \$18.35 @ \$18.85.

**Coke.**—There is a fair demand for Coke, which can still be bought at the ovens at \$1 7/8 ton or \$3.10, Cleveland delivery. There are indications of an increase of 50 cents 7/8 ton in quotations within the next ten days or two weeks.

**Old Rails.**—The market is dull. Old American can be bought for \$22 and the sale of a very small order is reported at that figure.

**Nails.**—Quotations for Iron Nails continue at \$1.95, and for Steel Nails, \$2.05, from store.

## Cincinnati.

Office of *The Iron Age*, Fourth and Main Sts., Cincinnati, May 21, 1888.

**Pig Iron.**—The prominent features of the local market for Pig Iron have undergone few changes of importance during the week. The volume of business has been fair, however, but made up of small transactions rather than large sales. Some sales of Mill Iron are reported at very low prices, but the little Foundry Iron obtainable has been held firmly at full prices. Southern Car-Wheel Iron has been much in demand, but little has been obtainable, and the few sales made were necessarily of small amounts. A number of new furnaces in the South have blown in, and several old stacks temporarily out have resumed, so that an additional supply of Foundry grades is anticipated. Several of the furnaces, however, have thus far failed to make the grade of Iron anticipated, and Northern furnaces going out of blast are reported greater in point of output than the new stacks thus far in blast in the South. This sort of reasoning is resorted to to maintain belief in higher prices, and there is apparently nothing to counteract this opinion: still prices fail to respond. Small sales of No. 2 Southern Foundry are reported made at \$16.90; 1500 tons, No. 1 Ohio Mill Iron is reported to have sold at \$14.50, and 6000 tons Southern do. at the same price, but holders, as a rule, demand \$14.75, and it is difficult to obtain any concessions from this rate. Three thousand tons Silvery Mill Iron is also reported sold at \$14, cash, here. There is a feeling at the close on the part of some that prices have reached near the bottom, and such dealers are desirous of buying at inside quotations. Others do not look for any improvement until fall, but all anticipate a better market during the winter. Prices current here for cash, with further revision, are as follows:

Hot-Blast Foundry.		
Southern Coke, No. 1.....	\$17.50 @	\$18.00
Southern Coke No. 2.....	16.50 @	17.00
Southern Coke, No. 3.....	16.00 @	16.50
Ohio Soft Stone Coal, No. 1.....	17.00 @	18.00
Ohio Soft Stone Coal, No. 2.....	16.50 @	17.00
Mahoning and Shenango Valley.....	17.00 @	18.00
Hanging Rock Charcoal, No. 1.....	20.50 @	22.50
Hanging Rock Charcoal, No. 2.....	19.00 @	21.00
Tennessee and Alabama Charcoal, No. 1.....	18.50 @	19.50
Tennessee and Alabama Charcoal, No. 2.....	17.00 @	18.00
Forge.		
Strong Neutral Coke.....	14.00 @	15.00
Mottled Neutral Coke.....	13.00 @	13.50
No. 1 Mill Coke.....	14.50 @	14.75
No. 2 Mill Coke.....	14.00 @	14.25
Car-Wheel and Malleable Irons.		
Southern Car-Wheel.....	23.00 @	23.00
Hanging Rock, Cold Blast.....	22.50 @	25.00
Lake Superior Car-Wheel and Malleable.....	21.00 @	22.00

**Manufactured Iron.**—The market for Manufactured Iron has remained easy, with free sellers at previous prices, but orders are meager and small in amount. Bar and Sheet Iron—Common Bar Iron, 1.90¢ @ 2¢; Charcoal Bar Iron, 2.90¢ @ 3¢; Sheet Iron, Boiled, Nos. 10 to 27, 2.50¢ @ 3.25¢; Sheet Iron, Charcoal, Nos. 15 to 25, 3 1/4¢ @ 4 1/4¢ 7/8 lb.

**Nails.**—There has been a fair demand for all kinds in a jobbing way, but with free offerings the market has ruled easy and prices are barely sustained, 10d @ 60d selling at \$2 @ \$2.05 7/8 keg, and other sizes at proportionate rates. Steel Nails sell at \$2.05 @ \$2.10 and Steel Wire at \$2.75 @ \$2.80 7/8 keg.

**Old Rails and Wheels.**—There has continued to be a fair demand for both Rails and Wheels and prices have ruled steady. Sales of rails from 100 to 1000 ton lots have been made at \$20.50 per ton. Wheels, too, have an improved demand at \$19 @ \$19.50 per ton.

Matthew Addy & Co. have been selected as agents for Shelby Charcoal Pig.

## Pittsburgh.

Office of *The Iron Age*, 77 Fourth Avenue, Pittsburgh, Pa., May 22, 1888.

The industrial situation continues in an unsettled and unsatisfactory condition, and the prospects for an early improvement are not encouraging. Tariff agitation and labor complications are having a bad effect, and, with a Presidential campaign which will be opened up within a few weeks, it looks as if trade is destined to continue in its present unsatisfactory condition during the remainder of the present year. The Iron and Steel trade of this district has not been in a worse condition at any time since 1873 than it is at present; orders continue scarce, and active competition has cut prices to an extent that leaves a very small margin. The great event of the past week was the shipment of over 10,000,000 bushels of Coal by river to down-river markets. It was all shipped away from here within 48 hours. It had to be done quickly, as the freshet came unexpectedly and there was no time for delay. The river from here to Wheeling, a distance of 100 miles, was full of towboats on Monday, with tows of from 125,000 to 225,000 bushels of Coal. The shipments of Coal out of the Monongahela Valley by river range from 75,000,000 to 100,000,000 bushels per year, and it is not strange that the river Coal men are anxious to have the National Government buy out the Monongahela Navigation Company and make the river free.

**Pig Iron.**—We have to report a continued dull and very unsatisfactory market. Consumers, while admitting that Pig Iron is very cheap, still refuse to buy beyond their immediate wants, and almost every purchase they have made for several months has been at a lower price than the preceding one. Cost of production has been reduced considerably within the past few weeks, but we fail to see where the furnacemen have benefited much thereby, as there has been a corresponding reduction in the price of Pig Iron. Furnacemen, as might be expected, are not in very good spirits, dissatisfied as they are with the present and not very hopeful of the near future. We quote prices as follows:

Neutral Gray Forge.....	\$14.50 @	\$15.25, 4 mos.
All Ore Mill.....	15.75 @	16.00 "
White and Mottled.....	14.00 @	14.50 "
No. 1 Foundry.....	17.00 @	17.25 "
No. 2 Foundry.....	16.00 @	16.50 "
No. 3 Foundry.....	15.50 @	15.75 "
No. 1 Charcoal Foundry.....	24.00 @	25.00 "
Cold Blast Charcoal.....	26.00 @	28.00 "
Bessemer Iron.....	16.50 @	16.00, cash.

Standard brands of Mill Iron may be fairly quoted at \$14.50 @ \$14.75, cash, and same grades of Bessemer at \$16.50, cash.

**Muck Bar.**—The market continues in much the same condition noted for some time past; not only is the demand light, but prices are weak, unsettled and unremunerative. Sales have been reported during the past week at prices ranging from \$26.25 to \$26.75, cash.

**Manufactured Iron.**—Demand is confined to the lowest possible limit. Both jobbers and large consumers are still impressed with the belief in lower prices. There is a fair volume of business in the aggregate, but orders are chiefly small, and but few, if any, of the mills are working up to their full capacity. Prices continue very unsettled, and it is difficult to give reliable quotations.

**Nails.**—There have been no new or important features developed in the Nail trade during the past week; here in Pittsburgh trade continues very light. We continue to quote prices at \$1.90, 60 days, 2 % off for cash, in carload lots and upward, and so far as we can learn there are no sellers here below the price quoted, which affords little or no margin for profit. Some of the Pittsburgh manufacturers say that if they cannot get cost they will close

their factories. The Nail business of Pittsburgh has assumed very small proportions, as compared with what it was some 15 or 20 years ago, when the large proportion of the Nails consumed West and South were made here. At present there are only three concerns here paying any attention to Nails, and at no time this spring have they been working more than half time.

**Wrought-Iron Pipe.**—There has been no improvement in this important interest during the week under review. The volume of business is possibly increasing somewhat, but prices continue irregular and unremunerative, and some manufacturers are indifferent about taking business in the present condition of affairs. So far as we can learn there is no effort being made to reorganize the association, and without it there cannot be uniform prices.

**Old Rails.**—We can report a sale of 500 tons American T's at \$22.25, but most sellers are asking \$22.50 @ \$22.75. A large consumer here reports having bought a lot of 600 tons from an Eastern railroad at equal to \$21.50, delivered in Pittsburgh, but there is said to be something back of this; either the Rails were not first class or else possibly the delivery was away off in the future at the option of the seller. The demand is chiefly for small lots for immediate delivery, and immediate is worth more than future delivery. The Pennsylvania Railroad Company have but few rails to sell. We can report a sale of 200 tons Old Steel Rails at \$20.

**Steel Rails.**—There is some inquiry and the market hence reported firm at \$31.50, cash, at mill; it is impossible, we are informed, to place an order here below the price quoted.

**Billets, &c.**—Bessemer Steel Billets are still quoted at \$28 @ \$28.50, cash, as to specification, quality and condition. American Wire Rods are quoted at \$41.50 @ \$42.50, cash sale; American Rail Crops, at \$17.25; the latter are dull and drooping.

**Railway Track Supplies.**—There is a fair business, but prices are weak and irregular; in the present condition of affairs it is impossible to give reliable quotations.

**Old Material.**—There is a fair demand, but mostly for small lots. No. 1 Railroad Scrap \$20. per net ton; Wrought Turnings, \$13 @ \$14, as to quality; Car Axles, \$25 @ \$26; Cast Borings, \$11.50 @ \$12.50, gross; Cast Scrap, \$16 @ \$16.50, gross; Old Car-Wheels, \$20.

## Louisville.

LOUISVILLE, KY., May 21, 1888.

**Pig Iron.**—The market has been very quiet and only small sales have been effected. Parties who intended to make heavy purchases are holding off to watch the effect of the reduction by the Thomas Iron Company in the East, as they believe that the amount of Southern Irons that have been going eastward will be somewhat reduced, and a larger amount will be shipped North and West, causing lower prices in this section. There is a great difference in furnaces' views, whether it is wise to sell at present prices for long delivery or only from hand to mouth. A few of the wealthier furnaces are selling but small quantities, as they prefer to stack Iron at present prices rather than to place it on the market. Others consider that the year will be one of low prices, and are determined to sell for long delivery. The coming in of new furnaces has effected the market somewhat, as, in order to sell their Irons, prices have been cut, and buyers have expected standard brands to meet these low figures.

Southern Coke, No. 1 Foundry...	\$17.00 @ \$18.00
" No. 2 "	16.00 @ 17.00
" No. 2 1/2 "	15.50 @ 16.50

Hanging Rock Coke, No. 1 Foundry...	17.50 @ 18.50
Hanging Rock Charcoal, No. 1 Foundry...	21.50 @ 22.50
Southern Charcoal, No. 1 Foundry...	18.00 @ 20.50
Silver Gray, different grades...	14.50 @ 15.50
Southern Coke, No. 1 Mill, Neutral...	14.50 @ 15.50
" No. 2 "	14.00 @ 15.00
" No. 1 " Cold Short	14.00 @ 15.00
White and Mottled, different grades	13.50 @ 14.50
Southern Car-Wheel, standard brands...	20.50 @ 21.50
Southern Car-Wheel, other brands...	18.50 @ 20.50
Hanging Rock, Cold Blast...	22.50 @ 23.50
Hanging Rock, Warm Blast...	18.50 @ 19.50

## New York.

**American Pig.**—The majority of furnace agents and dealers report that the week has been extremely dull. As was generally expected, the first effect of the announcement made last week was to check business, and the sales reported are small. The Thomas Iron Company report that a number of offers to take Iron at the prices named made by brokers have been declined, but that some consumers who have been holding back have entered orders aggregating about 5000 tons. Some of the Southern representatives have options out, from which nothing has been heard thus far, they being contingent on the result of experimenting by founders with trial lots. Some of the contracts for forward delivery made by Southern furnaces at a fixed price have been scaled down to meet the cut, the reduction in some cases being small, in others larger. The Alabama and Tennessee companies insist that they have come to stay, but that for the present they will not make efforts to place Iron, since it could only be for fall delivery, the output for the summer being booked. They urge that they are content to let the Thomas Iron Company fill their order books at present prices and await developments, so far as the market is concerned, until the necessity of providing a place for their output arises later on. In the meantime they claim to be willing to await the effect of present low prices upon the output of the Eastern Pennsylvania, New Jersey and New York furnaces. The representatives of these are not by any means unanimous. Some of them insist that they will continue to sell independently of the Thomas Iron Company, at prices higher than those of the latter, on the ground that the natural demand calls for a certain quantity of their Irons for mixture, &c., and that, while the sales of the Thomas Iron Company are individually by far the largest, they are inadequate to meet the demand. Thus the Lehigh Iron Company announce \$18.50 for 1 X, \$17.25 for 2 X, \$16.50 for 2 Plain and \$16 for Gray Forge, tide-water delivery. Consumers continue indifferent, buying only from hand to mouth, many of them holding the opinion that lower values may come before the snow flies. The general business outlook is certainly not regarded as promising, at least until after the elections are over, but it should not be forgotten that everything is conspiring to prepare the conditions for a sudden reaction. For the near future, however, a waiting policy is considered not alone safe but judicious by the majority. We quote standard brands of No. 1 Foundry, \$18 @ \$18.50; No. 2 Foundry, \$17 @ \$17.50, and Gray Forge, \$16 @ \$16.25. There is some talk that Southern freights to this and New England markets are to be lowered considerably.

**Scotch Pig.**—Business is light, with Coltness at \$20.25 @ \$20.50, Dalmellington, \$18.50 @ \$18.75, and Summerlee, of which the market is bare, \$20 @ \$20.50.

**Ferromanganese.**—Only small lots of foreign are called for, the bulk of the business being taken at Pittsburgh, where 80 % is sold at \$52.75 equivalent to \$50 @ \$50.25 for foreign at tidewater.

**Bar Iron.**—We continue to quote for car-load lots, on dock, half extras, Common 1.65¢ @ 1.7¢; Medium, 1.7¢ @ 1.75¢ and Refined, 1.75¢ @ 1.9¢.

**Structural Iron.**—A fair amount of business is being done and is in sight. At a meeting of Bridge manufacturers last week the general situation was discussed. We are informed by a leading authority that no effort whatever was made to arrange prices or to enter into any pooling arrangement. We quote: Bridge Plates, 1.9¢ @ 2¢. Angles, Iron and Steel, 2¢ @ 2.20¢; Tees, 2.5¢ @ 2.7¢; Channels and Beams, 3.3¢, on dock. Foreign Beams are being offered at 2.6¢ @ 2.7¢.

**Plates.**—Competition, both from mills rolling from imported stock and from works west of the Allegheny Mountains, continues sharp. We quote: Tank, 1.9¢ @ 2.10¢; Shell, 2.15¢ @ 2.4¢; Steel Tank, 2.1¢ @ 2.15¢; Shell 2.15¢ @ 2.25¢; Flange, 2.6¢ @ 2.75¢, and Fire-Box, 3¢ @ 3.25¢. Foreign Steel Sheets, No. 16, are quoted at 2.15¢ @ 2.25¢.

**Steel Rails.**—The market continues very dull both East and West, with very few sales reported. The only order of any magnitude in the market accessible to Eastern mills is an 8000-ton lot for Alabama delivery. The reports of sales at \$30 at mill are denied, and the statement of Mr. Andrew Carnegie to that effect in his letter printed elsewhere is considered unfounded. It is explained that such an inference as to what competitors might be doing grows out of the circumstance that the majority of sales lately made have not been based on a mill price, but are bids for delivery at distant points. In the greater number of cases the freight rates of the different mills are unknown, and erroneous guesses as to what they are have caused the rumors of prices below \$30.50, which is stated to be the lowest price made at Eastern mills thus far.

**Wire Rods.**—In moderate-sized lots a fair aggregate of business is being done, chiefly for prompt delivery, for which importers ask \$41. There is little disposition to enter into contracts for forward delivery.

**Old Rails.**—Sales in this market, exclusively of foreign stock, from store, aggregate about 25,000 tons of Tees, at \$20 @ \$20.50, with some demand at the close. Stocks here are now pretty well exhausted, with the exception of lots held on consignment, in the hands of bankers or in the hands of importers. The quantity available must have been reduced now to a fraction of what it has been, and that is well held.

**Railroad Fastenings.**—Spikes are selling at \$1.90 at mill, equivalent to \$2.05 delivered. Fish Plates are 1.85¢ @ 1.9¢.

A. Milne & Co., importers of Swedish Iron, have moved lately from 62 Cedar street to Rooms 134 and 135, No. 1 Broadway.

## Metal Market.

**Copper.**—The pool sale alluded to in our last report, at 16 1/4¢, covers three months' deliveries—June, July and August—and the amount appears to have been between 8,000,000 and 10,000,000 lb. Purchases made by consumers not in the pool have been on a moderate scale since and only to cover absolute requirements, at 16 1/4¢ for Lake, 16 1/4¢ for Arizona and 15 1/4¢ for the commoner casting brands. During the latter part of last week trading at the exchange comprised 750,000 lb at 16.60¢ for May, June and July; 16.50¢ for August; 16.35¢ for October, and 16¢ for January. On Monday and yesterday the dealings there amounted to—altogether—about



725,000 lb. at 16.60¢ for May, 16.60¢ @ 16.55¢ for June and 16.40¢ for September. As the market is situated there is but little inclination to speculate in the nearer months, more or less under control of the syndicate, but the later months begin to attract more attention. In London meanwhile Chili Bars on the spot ranged between £82. 15/ and £81, and futures from £75. 10/ down to £75. 5/, the Whitsuntide holidays interrupting trade, so that the aggregate transactions did not exceed 575 tons. London cables Chili Bars steady to-day at £81 spot and £75. 10/ futures; Best Selected unaltered, £80. Our own market closes firm at 16.60¢ for spot, May, June and July, and 16.45¢ August; 325,000 lb selling on the Metal Exchange on the above basis in the forenoon. The Tamarack Mining Company, after paying quarterly dividends of \$3 per share in July, will have a surplus of \$500,000. The Atlantic Mining Company will thoroughly explore section 16 of its property the coming summer. This section is near the locality where a miner discovered a very rich vein in a shaft sunk by him a year ago. The Rio Tinto Company's general meeting came off in London on May 11th. The total production of Metallic Copper was 25,733 gross tons in 1887, the average price for which was £48 ½ ton. Under the arrangement made with the French syndicate they expect an addition of at least £20 ½ ton upon the 26,000 tons they expect to turn out annually during the three years for which the contract was made. Rio Tinto shares declined at Paris 8 ½ francs.

**Tin.**—During the last three days of last week our market was dull, with a light jobbing demand at 21¢ @ 22 ¼¢, and but few speculative dealings at 20.50¢ @ 20.90¢ for May; 19.30¢ @ 19 ½¢, June, and 18.50¢ @ 19.10¢, July, the market ruling at the outside figures yesterday, while London, which came £84. 15/ spot and £85. 10 futures on Thursday of last week, improved to £85 and £86 respectively yesterday, the total transactions in London not exceeding 60 tons during the interval. Gradually the situation gets to be an exceedingly strong one on both sides of the Atlantic, dealers and consumers all being bare of Tin and rushing in to replenish supplies. The deliveries in England and Holland are cabled to be now already about 2000 tons ahead of what they were in April on this date. Mine owners in the Straits decline selling any Tin at present figures, but on the contrary are buying in London. The syndicate at present holds firmly 16,000 tons in London and Holland. The visible supply on May 31st is expected to show the favorable change. London cables this morning £86.15 spot and £87. 5/ futures; the closing spot price in New York to-day is 21 ¼¢ at which it winds up firmly. **Tin Plates.**—The demand on the spot has been fair at steady figures, while considerable business has been done in futures, including 15,000 boxes 14 x 19 ½ Cokes on the spot and futures at \$4.50, \$4.42 ½ for June, and \$4.30 July and August. Spot stocks are light, especially in Ternes. We quote large spot lots as follows: Siemens-Martin Steel, Charcoal finish, \$5.10 @ \$5.25; ditto, Coke finish, \$4.80 @ \$4.90; Ternes, \$4.35 @ \$4.40; Bessemer Cokes, \$4.55 @ \$4.60 and Wasters, \$4.40 @ \$4.50; Penlan Grade Cokes, \$4.50. Coke Tins are selling at 13/ in Liverpool.

**Lead.**—There has been more doing at the decline, consumers taking altogether about 1000 tons Common Domestic at 4.05¢ and 4¢, the market closing weak at the latter figure, there being an impression that during the coming dull summer months a further decline may take place, perhaps to 3 ½¢. Some Refined was sold

at 4.05¢, and the present quotation for it is 4¢ @ 4.05¢. London has also given way from £12. 7/6, Soft Spanish, to £12, and English Pig from £12. 15/ to £12. 5/. At the Metal Exchange transactions have been light since our last report, including 162 tons July at 4.05¢ @ 4.07 ½¢, spot, and May ruling 3.95¢ @ 4.02 ½¢, and June 3.97 ½¢ @ 4.05¢. Chicago wires a dull market at 3.75¢, and St. Louis at 3.70¢.

**Spelter and Zinc.**—Common Domestic Spelter has been featureless and only moderately dealt in, the current price being 4.60¢. Silesian may be quoted 5.25¢, nominally; it is unaltered in London, £16. 15/. The report of the Vieille Montagne Company, of Belgium, is published, showing gross receipts for 1887 of 3,918,950 francs, against 3,143,234 in 1886, a gain of 775,900 francs, due in part to the rise in Spelter and Sheet Zinc during the last quarter of last year. The dividend declared is 12.50 francs per one-tenth share. The actual assets on December 31 were 16,813,479, without counting the real estate and plant, against 16,008,306 francs December 31, 1886. **Sheet Zinc**—Continues in good demand at 6.50¢ @ 6.75¢, with a light stock.

**Antimony.**—Has been moderately dealt in at 13.50¢, Cookson, and 10.25¢, Hallett, the latter remaining £45 in London.

Henry Nash & Co., of 12 and 14 Tower Buildings North, Water street, Liverpool, send us a diagram showing the fluctuations in the prices of Straits Tin and of American Coke and good Charcoal Tin Plates monthly, from 1878 to 1887, both inclusive. In tabular form the average prices of these commodities and of Hematite Pig in Wales, Palm Oil, Siemens-Martin Steel Bars and Bessemer Steel Bars are added, together with such statistical data as annual shipments of Plates from Liverpool and from Welsh ports to the United States.

#### New York Metal Exchange.

The following sales are reported:

THURSDAY, May 17.	
20 tons Tin, May.....	20.50¢
25,000 lb Copper, June.....	16.60¢
75,000 lb Copper, May.....	16.60¢
16 tons Lead, May.....	4.10¢
25,000 lb Copper, May.....	16.60¢
50 tons Lead, May.....	4.10¢
30 tons Tin, June.....	19.15¢
FRIDAY, May 18.	
125,000 lb Copper, May.....	16.60¢
50,000 lb Copper, August.....	16.50¢
50,000 lb Copper, October.....	16.35¢
25,000 lb Copper, January.....	16.00¢
25,000 lb Copper, October.....	16.35¢
75,000 lb Copper, May.....	16.60¢
10 tons Tin, June.....	19.25¢
25,000 lb Copper, January.....	16.00¢
SATURDAY, May 19.	
50,000 lb Copper, May.....	16.60¢
25,000 lb Copper, September.....	16.40¢
25,000 lb Copper, June.....	16.60¢
25,000 lb Copper, September.....	16.40¢
100,000 lb Copper, June.....	16.55¢
(Sellers right to double.)	
125,000 lb Copper, May.....	16.60¢
MONDAY, May 21.	
125,000 lb Copper, May.....	16.60¢
25,000 lb Copper, June.....	16.55¢
(Sellers right to double.)	
150,000 lb Copper, May.....	16.60¢
25,000 lb Copper, May.....	16.55¢
25,000 lb Copper, May.....	16.60¢
WEDNESDAY, May 23.	
50,000 lb Lake Copper, spot.....	16.60¢
175,000 lb Lake Copper, short notice.....	16.50¢
50,000 lb Lake Copper, June.....	16.60¢
50,000 lb Lake Copper, August.....	16.45¢
25,000 lb Lake Copper, July, selling right to double.....	16.60¢
100,000 lb Lake Copper, July.....	16.60¢
20 tons Tin, May.....	20.65¢
10 tons Tin, May.....	20.70¢
112,000 lb Lead, July (sellers right to double).....	4¢
65,000 lb Lead, spot.....	3.97 ½¢
32,500 Lead, May.....	3.95¢

D. W. C. Carroll & Co., Limited, boiler manufacturers, Pittsburgh, have made an assignment; liabilities estimated at \$75,000; assets \$160,000.

## Financial.

OFFICE OF THE IRON AGE.  
WEDNESDAY EVENING, May 23, 1888.

Crop advices from the Northwest this week are decidedly better, causing a break in the wheat market on Monday of 2 ¼¢ @ 2 ½¢ ½ bushel, accompanied by brisk trading, and in spot stock there was a corresponding decline. French exporters taking an interest to a moderate extent. For the same reason there was a quickened inquiry for room for wheat and corn for Great Britain and the Continent. Northern Pacific officers say that the spring wheat prospects are good in their territory, the acreage being 10 % larger than last year. Favorable accounts are received by the Agricultural Department from a large section of the wheat belts, but as a rule the season is too cold for rapid growth. In North Carolina tobacco has suffered severely from frosts, and the overflow of the Mississippi River in the Illinois bottom lands has caused a loss to crops alone estimated at \$3,000,000. A Berlin dispatch says enormous quantities of Russian wheat are being imported into Germany. The rub-a-dub of military preparation in Europe—the enormous Russian loan of £44,000,000 in France, and the demands of England and France for larger credits—have little effect on the general markets. Emancipation in Brazil is the pretext for an advance in coffee, but the market is quiet on the assurances of the Brazilian minister that labor disturbance is impossible. Dry goods jobbers report that the orders for spring and summer fabrics compare well with the corresponding time in former years. Grocery jobbers are quiet. Raw sugars were stiffer. In provisions the tendency was upward. Lard advanced. Cotton was extremely dull. The first boat through on the canal arrived on Friday.

The volume of trade throughout the country is materially affected by heavy rains and floods in most of the Northern States. The total clearings of 38 cities during the week show a decrease of 16.8 per cent.; outside of New York, 8.5 per cent.

The Stock Exchange markets are dull and featureless, trade being limited and used almost wholly in speculative hands. Railroad bonds were more active and more was done in State bonds, but Government show a falling off. Quotations are as follows:

U. S. 4 ½s, 1891, Registered.....	107 ¾ @ 107 ¾
U. S. 4 ½s, 1891, coupon.....	108 ¾ @ 108 ¾
U. S. 4s, 1907, registered.....	127 ¾ @ 127 ¾
U. S. 4s, 1907, coupon.....	127 ¾ @ 127 ¾
U. S. Currency 6s, 1895.....	121 @ .....
U. S. Currency 6s, 1896.....	123 @ .....
U. S. Currency 6s, 1897.....	125 @ .....
U. S. Currency 6s, 1898.....	128 @ .....
U. S. Currency 6s, 1899.....	130 @ .....

The bank statement showed a heavy increase in surplus revenue, amounting to \$5,508,675, and bringing the reserve \$27,705,350 above legal requirements. The principal increase was due to Treasury operations in connection with bond purchases and the funds thus transferred are likely to remain in the banks until trade or speculation shows some revival. At present the demand for money is diminishing, as indicated by a contraction of \$2,603,600 in loans. In specie there was a gain of \$5,302,000. Time money is very easy and promises to remain so for some weeks to come, despite the shipment of \$3,750,000 to Europe, mostly on special order from Germany, made irrespective of the rates of exchange. First-class commercial paper is scarce. The Baltimore and Ohio's new loan of \$7,500,000 was placed here and abroad without difficulty. This feature renews interest in the attempt about to be made to place Reading's new 4 % loan. Quotations for 60 @ 90 days' indorsed bills are 4 ½ @ 5 %, longer dates 4 ½ @ 5 ½ %. The price of silver is now at the lowest point on record. It is quoted

in London at 41½d. 70 ounce. Here it was 91½¢ 70 ounce, making the amount of silver in our dollar worth but 70.54¢. The posted rates for sterling were advanced on Thursday, but at the end of the week they were \$4.87½ for 60 days and \$4.90 on sight. The London *Economist* thinks it improbable that gold shipments from the States will assume very large dimensions, as the Treasury creates a drain despite bond purchases.

The total amount of bond purchases by the United States Treasurer, thus far, under the circular of April 17 is \$20,617,200, of which \$13,202,750 were 4 per cents and \$7,414,450 were 4½ per cents. Their cost to the Government was \$16,723,874 for the 4 per cents and \$7,989,988 for the 4½ per cents, a total of \$24,713,862. Had the bonds been allowed to run to maturity their principal and interest would have amounted to \$31,951,093 or \$7,237,231 more than their purchase price. Last Friday some miscreant made a bogus offer of \$5,000,000 bonds, and the market rose ½ @ 2 % on the false announcement that it had been accepted. The present surplus is about \$100,500,000, and that it has not been reduced below that amount by the recent purchase of bonds is due to the continued heavy revenue from all sources. The receipts for the first 19 days of this month aggregate \$22,500,000, and are greater by \$12,500,000 than the expenditures during the same period. This excess, however, will be greatly reduced before the end of the month by the payment of several millions for pensions.

The imports of merchandise at this port last week were valued at \$8,555,000, of which nearly \$1,500,000 represents dry goods. Since January 1 the total is \$187,915,000, against \$184,732,000 for the same time last year. The exports were \$1,500,000 below those of the previous week, the valuation being only \$5,165,000. Since January 1 the total is \$114,889,635, against \$116,626,000 for the same time last year and \$119,974,000 in 1886.

According to the Custom House report, the exports of specie from New York last week were \$1,219,000, making a total of \$11,302,000 since January 1, as compared with \$8,423,000 for the same time last year. The imports were \$134,000; total since January 1, \$4,856,000.

O. D. Baldwin, formerly president of the Fourth National Bank, has been elected president of the American Loan and Trust Company. The Nevada Bank is again in control of Ex-Senator Fair, who was crowded out during the California wheat speculation.

The traffic agreement between the Canadian Pacific and the "Soo" system is completed. The "Soo" will make rates on all east-bound business and Canadian Pacific west-bound, and each road must stand by the rate. Boston business will pass via the Boston and Lowell. New York business goes via the Rome, Watertown and Ogdensburg and New York, Ontario and Western. All roads are to have a *pro rata* share. The freight department of the Reading Railroad is preparing a schedule of new rates to iron manufacturers upon material used in manufacture. It is understood that reductions of about 15 % have been made, and that they will take effect June 1. The manufacturers asked greater concessions.

## Coal Market.

The Anthracite Coal trade is quiet, as usual at this season of the year, business being of a routine character. Prices, however, are upheld with fidelity by the six companies, who seem to scrupulously adhere to the general understanding in some way arrived at without formal agreement. Little is said about cutting, even by outside operators, but the latter are known to be making some concessions to buyers.

Production during the past week has been shortened 80,000 tons compared with the previous week, the total being 609,851 tons. Nevertheless, accumulation at the shipping ports continues. According to the official statements the stock on hand at tidewater, April 30, was 733,000 tons, and during March there was an increase of 267,605 tons. Despite this showing, the output since January up to the 19th inst. is increased 103,400 tons compared with the corresponding date last year. The comparison for three weeks is as follows:

	Week.	Year.
May 5.....	621,142	11,115,687
May 12.....	690,489	11,906,691
May 19.....	609,851	12,533,224

Quotations are as follows: Wyoming free burning, f.o.b. at South Amboy and Weehawken, Broken or Grate, \$3.75; Egg, \$4; Stove and Chestnut, \$4.25; Reading Hard White Ash, at Port Elizabeth, Lump and Steamboat, \$4.25; Broken, \$4; Egg, \$4.10; Stove, \$4.25; Chestnut, \$4.15; Pea, \$3. Free Burning White Ash is the same, except Broken, \$3.75, and Egg, \$4. Lehigh Coals are for Lump, \$4.50; Broken, \$4.20; Egg, Stove and Chestnut, \$4.10 70 ton, f.o.b. at the loading ports.

Small vessels at shipping ports are obtained with difficulty, which partly accounts for the accumulation, but of late Coal is going forward to Eastern ports more freely in response to orders. It is said that the Pennsylvania and Reading railroads will act in harmony in reducing freight rates to iron manufacturers, but the reductions of about 15 % already made in some cases do not seem to have done much good.

The Pennsylvania Railroad have carried since January 1 4,290,000 tons; increase, 482,000 tons, compared with last year. The Reading shipped 135,000 tons, including 55,000 tons to Port Richmond and Elizabethport.

The contract for the supply of 28,000 tons of Coal to the pumping station of the Brooklyn Water Works was awarded to the Lehigh and Wilkesbarre Coal Company, at their bid of \$4.21 a ton.

The contract with the New York, New Haven and Hartford Railroad Company for about 170,000 tons of Soft Coal is said to have been at \$3.33 per long ton, discharged at New Haven.

## Detroit.

WILLIAM F. JARVIS & Co., under date of May 21, report as follows: Contrary to advices from other points, we have to report an active market here, both on Lake Superior Charcoal and some grades of Coke Irons, but prices are necessarily low. Some buyers are still of the opinion that prices have not yet reached the lowest point, and as long as they continue to think this they will not buy in any quantity for future delivery. There are, however, an increasing number who believe that the present is a favorable time to place orders and are contracting for their wants for a number of months to come, and in some cases for all the balance of this year. Manufacturers nearly all agree that it is useless to try to force sales at present, for when buyers have their minds made up that prices will be lower and an offer is made at a concession, their answer is: If that price can be made now a lower one will be made later on. However, business has been good since our last report, and for the present we quote as follows:

Lake Superior Charcoal, all numbers.....	\$20.00 @ \$21.00
Lake Superior Coke, All Ore.....	12.50 @ 20.00
Lake Superior Coke, Under Mixed	18.50 @ 19.00
Standard Ohio Blackband.....	19.50 @ 21.00
Southern No. 2.....	18.25 @ 18.75
Southern Silver.....	17.50 @ 18.00
Southern Gray Forge.....	15.75 @ 16.25
Jackson County, Ohio, Silvery.....	19.00 @ 19.50
American Old Iron Rails.....	22.00 @ 23.00
Old Wheels.....	20.00 @ 21.00

## Imports.

The imports of Iron and Steel, Hardware, &c., at this port from May 7 to May 18, inclusive, and from January 1 to May 18, inclusive, were as follows:

Iron and Steel.		May 7 to May 18, Tons.	Jan. 1 to May 18, Tons.
Iron Ore: Lawrence, Johnson & Co.....	300	300	
A. Earnshaw.....	295	4,789	
Ennis & Co.....	700	1,21	
R. De Flores.....	513	2,817	
Pig Iron: G. W. Stetson & Co.....	1,250	8,790	
Crocker Bros.....	360	3,300	
N. S. Bartlett.....	300	2,300	
Jas. Lee & Co.....	200	300	
Spiegelstein: Naylor & Co.....	600	2,439	
Crocker Bros.....	25	1,156	
J. A. Jansen.....	10	10,042	
Steel: W. F. Wagner.....	100	581	
Naylor & Co.....	88	204	
Pierson & Co.....	14	14	
F. S. Pilditch.....	21	27	
M. Cohn & Co.....	11	169	
R. F. Downing & Co.....	12	141	
Montgomery & Co.....	9	21	
Newton & S.....	8	93	
C. S. Mersick & Co.....	7½	14½	
J. Abbott & Co.....	21	229	
Chas. Hugill.....	18	125½	
C. F. Boker.....	22	69½	
R. Crooks & Co.....	30	30	
R. H. Wolff & Co.....	15	227	
C. W. Power.....	4	30	
Iron: Sage, Newell & Co.....	96	167	
E. G. Jacobus.....	3	19	
J. Abbott & Co.....	10	921	
Steel Rods: Naylor & Co.....	875	6,335	
J. Abbott & Co.....	193	3,204	
J. A. Roebbing's Sons.....	80	608	
Lazard Freres.....	100	100	
A. Heyn.....	289	1,243	
A. Milne & Co.....	100	1,215	
R. F. Downing & Co.....	42	101	
R. H. Wolff & Co.....	23	1,583	
Steel Sheets: R. Crooks & Co.....	40	124	
Pierson & Co.....	25	407	
Naylor & Co.....	24	314	
Lalance & G. Mfg. Company.....	37	350	
Steel Billets: Naylor & Co.....	77	493	
J. Moore's Sons & Co.....	25	25	
P. W. Wright & Sons.....	20	20	
Ferromanganese: Gelsenheimer & Co.....	150	150	
Dana & Co.....	109	100	
Steel Bars: Union Bridge Company.....	46	258	
Steel Tubes: J. S. Leng.....	5	15	
Steel Nail Rods: J. Abbott & Co.....	35	35	
Steel Black Plates: R. Crooks & Co.....	293	293	
Bessemer Steel: A. Milne & Co.....	52	52	
Spring Steel: A. Milne & Co.....	130	206	
Scrap Steel: Naylor & Co.....	108	174	
Sheet Iron: T. B. Coddington & Co.....	76	587	
Wire Rods: R. H. Wolff & Co.....	10	15	
Iron Rivet Rods: J. Abbott & Co.....	555	1198	
Sweat Iron: Page, Newell & Co.....	102	102	
Iron Pipes: W. H. Wallace & Co.....	2	22	
Martin's Metal: Page, Newell & Co.....	51	51	
Iron Rods: J. Abbott & Co.....	175	177	
Old Iron Rails: Henderson Bros.....	100	497	
Steel Wire Rods: Naylor & Co.....	529	529	
Steel Forgings: Toos, Prosser & Co.....	196	2,078	
Scrap Iron: P. F. Gerhard.....	8	8	
Iron Girders: R. F. Downing & Co.....	55	215	
Screw Rods: American Screw Co.....	110	437	
Iron Ring: Thos. Prosser & Son.....	1¾	1¾	
Old Fish Plates: Newmark & Gross.....	75	115	

## Tin Plates.

	Boxes.	Boxes.
A. A. Thomsen & Co.....	10,915	54,735
Pratt Mfg. Company.....	15,324	68,859
Phelps, Dodge & Co.....	13,123	189,355
Dickerson, Van Dusen & Co.....	8,670	101,512
N. L. Cort & Co.....	6,171	43,243
G. B. Morewood & Co.....	4,333	12,482
Brace & Cook.....	5,733	31,186
T. B. Coddington & Co.....	4,732	87,944
S. Shepard & Co.....	1,957	5,539
R. Crooks & Co.....	2,135	28,660
Hy. Whittemore & Co.....	722	24,642
C. S. Wersack & Co.....	1,010	3,000
H. R. DeMilt & Co.....	941	6,275
Merchant & Co.....	899	4,301
Central Stamping Company.....	546	8,325
J. M. Warren & Co.....	150	150
Lalance & G. Mfg. Company.....	147	893
Iron Clad Mfg. Company.....	81	81
Tagger's Tin: T. B. Coddington & Co.....	220	380

## Metals.

	Pounds.	Pounds.
Tin: J. Abbott & Co.....	564,902	7,060,012
A. A. Thomsen & Co.....	11,286	22,509
Muller Schall & Co.....	448,044	1,812,328
Naylor & Co.....	22,438	735,056
Nickel: McCoy & Sanders.....	9,940	102,340
Spelter: Naylor & Co.....	86,885	195,178
Casks.		Casks.
Antimony: Edw. Hill's Sons.....	100	775



### Irons and Metals Warehoused From May 7 to May 18, Inclusive.

Lead: E. A. Caswell.....	Pounds	895,131
Spelter: Lewisohn Bros.....	Casks.	111,993
Antimony: Edw. Hill's Sons.....		100

#### Exports of Metals.

	May 7 to May 18.	Jan. 1 to May 18.
	Pounds.	Pounds.
Copper: J. Abbott & Co.....	87,500	4,238,903
Lewisohn Bros.....		3,770,272
F. A. Lomal.....		2,581,233
American Metal Co.....	217,500	3,542,303
G. H. Nichols.....		223,939
J. Bruce Ismay.....		112,000
S. Mendel.....		560,000
Ledoux & Co.....		110,276
Phelps, Dodge & Co.....		290,664
Muller, Schall & Co.....		490,000
Copper Queen Con. M. Co.....		224,034
J. Kennedy, Tod & Co.....		112,026
H. Becker & Co.....		1,250
Orford C. & S. Rfg. Co.....		224,881
Robt. M. Thompson.....		125,000
Thos. J. Pope, Sons & Co.....		765,880
J. Parsons & Co.....		67,500
Bridgeport Copper Co.....		112,000
C. Herold.....		250,000
Phelps Bros.....	6,250	6,250
Copper Matte: Williams & Terhune.....	557,970	23,004,128
Lewisohn Bros.....		3,953,380
American Metal Company.....		519,485
J. Abbott & Co.....		295,060
C. Ledoux & Co.....		458,800
F. W. J. Hurst.....		184,288
G. H. Nichols.....		722,777
H. T. Nichols & Co.....	180,995	180,995
Old Copper: J. Bruce Ismay.....	3,000	3,000

#### Hardware, Machinery, &c.

Am. Metal Co., Hdw., bxs., 7
Barbour Bros. & Co., Mach'y, cs., 2
Baker, Hermann & Co., Mdse., cs., 20; Arms, cs., 18
Clark, G. A. & Co., Mach'y, cs., 57
Ceballos, J. M. & Co., Mach'y, cs., 2
Degraw, Aymar & Co., Cables, pkgs. and pcs., 20
Enginger, L. A., Mach'y, cs., 2
Field, Alfred, & Co., Mdse., cs., 18; Hdw., cs., 7; Guns, cs., 1; Anvils, 54
Graef Cutlery Co., Cutlery, cs., 7; Hdw., cs., 1
Hartley & Granam, Arms, cs., 3
Kastor, Ad., Mdse., cs., 9
Lau, J. H. & Co., Arms, cs., 6
Merch. Disp. Co., Arms, cs., 25
Meriden Cutlery Co., Mdse., cs., 5
Newton & Shipman, Files, cask, 1
Otis Iron and Steel Co., Mdse., cs., 2
Pollock, Mos. C., Machine, 1
Sachs & Richmond, Nails, csks., 17
Schoverling, Daly & Gales, Hdw., cs., 13
Sanderson & Sons, Mach'y, cs., 3
Smith & Co., Mach'y, cs., 8
Tryon, E. K., Mdse., cs., 17
Wormer & Co., Ironware, cs., 14
Wessels Co., G., Anchor, 1; Cable, 1
Wiebusch & Hilger, Llm., Mdse. cs., 9; Hdw., cs., 2; csks., 4
Witte, John G. & Bro., Cutlery, cs., 5; Guns, cs., 4
Order, Mach'y, pcs. and cs., 6

## British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY MAY 23, 1888.

The statistics of supply and deliveries of Copper reveal continued additions to the surplus stock. This naturally has a restraining influence upon outside speculation for a rise. It also operates to cause consumers to adhere to their previous conservative methods of buying and outside sources of supply are given a preference over the syndicate wherever it can be done. However, the outside stocks are, according to good authority, steadily diminishing, and it is the impression that the syndicate will not long have cause for anticipating serious outside obstacles to their plans. That the syndicate is more interested at the present time in keeping prices on a certain level than in "cornering" the market outright seems to be the general impression. This view is strengthened by recent events, although the movements that encourage the belief suggest that opportunities for a "turn" in the speculative arena are not overlooked. The decline to £81 in the price of Chili Bar prompts was, in fact, due mainly to an accommodating spirit manifested at a time when outside speculators were somewhat per-

plexed. The unfavorable statistical exhibits latterly have, it appears, prompted more or less selling of three months' futures. As the time for deliveries drew near and no evidences were visible of a probable decline below £75, a very good demand developed for cash warrants. Instead of tightening the screws the syndicate "relieved" the market by supplying this demand freely and even offering a few more than anxious buyers had use for. Hence the decline in price to £81. Three months' futures were supported at £75 @ £75. 10/, however, and it is believed that prices will not be allowed to go below that point for some time to come.

The speculative trading in Block Tin has continued to be on a very restricted scale in the absence of any reassuring features. The French operators are not affording the slightest clue to their policy and the general disposition is, therefore, to stand from under. Judging by the manner in which the demand is being met, these parties are selling all they can without depressing prices. There is no evidence of any pressure being brought to bear upon the market from other quarters.

There has been a very good demand for Tin Plate and a degree of interest is manifested by both buyers and sellers that promises well for a large business in the event of the price of Block Tin being reasonably steady. In point of fact the indications are that the business lost during the Tin "corner" period could soon be recovered if confidence were restored. This fact is doubtless having some influence in shaping the course of the market for Tin.

There is at last a bright spot in the Pig Iron market. Outside operators who thought warrants good property at 40/ and upward some time ago would, apparently, have nothing to do with them now at 3/ less. Members of the trade have invested liberally during the past week, however, and this, too, in the face of a rather dubious tone. The presumption is that they have purchased for the very good reason that late prices do not more than cover the bare cost of production. In the Cleveland district additional furnaces are being blown in owing to the continued active demand and steady reduction of supplies there. The substitution of this Iron for low grade Scotch product continues to increase.

There has been a very good demand for Steel products, taking the market as a whole, although in some departments orders are not as liberal as might be wished. The Rail-makers are again discussing the advisability of combining for the purpose of regulating selling prices. It is stated that they intend to invite co-operation of the German and Belgian makers. The outcome of the movement is highly problematical.

Messrs Hawks & Crawshays, Gateshead, are putting up a second Siemens-Martin furnace.

**Scotch Pig.**—No improvement in the demand for makers' Iron, and prices are still weak.

No. 1 Coltness, f.o.b. Glasgow.....	47 6
No. 1 Summerlee, " ".....	47 6
No. 1 Gartsherrie, " ".....	44 6
No. 1 Langloan, " ".....	45 8
No. 1 Carnbroe, " ".....	39 9
No. 1 Shotts, " at Leith.....	45 6

No. 1 Glengarnock, " Ardrossan.....	43 9
No. 1 Dalmellington, " ".....	39 6
No. 1 Eglinton, " ".....	38 6
Steamer freights, Glasgow to New York, 6/; Liverpool to New York, 7/6.	

**Cleveland Pig.**—Only a fair business and prices without material change. Middlesboro', G. M. B., 34/; No. 3 do., 31/3.

**Bessemer Pig.**—Demand running light, and prices barely steady. West Coast brands, mixed numbers, 42/ @ 42/6, f.o.b.

**Spiegeleisen.**—The market quiet, but firmer prices current. English 20 % quoted 77/6, f.o.b. N. W. England.

**Steel Rails.**—Prices unchanged, and the demand only fair. Standard sections quoted at £3. 17/6, f.o.b. at N. W. England works. Middlesboro' district about 2/6 @ 5/ less.

**Steel Blooms.**—The market rather weak, but a fairly good business passing. We quote at £3. 12/6 @ £3. 15/ for 7 x 7, f.o.b. at N. W. England works.

**Steel Billets.**—There is a fair business, but at somewhat irregular prices. Bessemer, 2½ x 2½ inch, £3. 15/ @ £3. 16/, f.o.b. at N. W. England works.

**Steel Slabs.**—The market quiet and prices barely steady. Bessemer, £3. 15/, f.o.b. at N. W. England works.

**Steel Wire Rods.**—Only a moderate trade, and prices slightly in buyers' favor. Mild Steel No. 6 quoted at £5. 18/6, f.o.b. at N. W. England Works. No. 5 about 2/6 less.

**Old Rails.**—Market firmer and offerings rather light. Tees quoted at £3. 2/6 and Double Heads £3. 3/9, c.i.f., New York.

**Scrap Iron.**—The market quiet and steady. Heavy Wrought at £2. 7/6 @ £2. 10/, f.o.b.

**Crop Ends.**—Prices firmly held, but business moderate. Bessemer quoted £2. 5/ @ £2. 7/6, f.o.b.

**Tin.**—The market very firm to-day, but quiet. Straits quoted at £86. 10/ @ £86. 15/, spot, and £87 @ £87. 5/ for three months' futures.

**Tin Plate.**—There is more business and the market is firmer.

IC Charcoal, Allaway grade.....	15/ @ 15/6
IC Bessemer steel, Coke finish.....	12/9 @ 13/
IC Siemens " ".....	13/3 @ 13/6
IC Coke, B. V. grade.....	13/ @ 13/3
Charcoal, Terne, Dean grade.....	12/ @ 12/6

**Manufactured Iron.**—Trade rather slow, with former prices current. We quote, f.o.b. Liverpool:

Staff. Ord. Marked Bars.....	5 0 0 @ 5 2 6
" Common ".....	5 0 0 @ 5 2 6
" Bl'k sheet, singles.....	6 7 6 @ 6 0 0
Welsh Bars (f.o.b. Wales).....	4 15 0 @ 4 17 6

**Copper.**—A firm tone to the market but trade moderate. Chili Bars closed at £82, spot, and £75. 10/ three months' futures. Best Selected, £82 nominal.

**Lead.**—Market slow and prices still weak. Soft Spanish about £12. 2/6 at the close.

**Spelter.**—The demand moderate but prices steady. Silesian, ordinary, £16. 10/ @ £16. 15/ at the close.

The directors of the Oil City Tube Company, of Oil City, Pa., have increased the capital stock of the company from \$200,000 to \$300,000. Among contracts now being filled by the firm is the manufacture of the pipe for a gas company, to supply the town of Wapakoneta, Ohio. The gas will be piped from the St. Mary's field, 18 miles distant.

## Hardware.

With the prevalence of better weather there has been a somewhat improved demand and a fair volume of business is being transacted in a quiet way. Prices are without material change, but in several lines are not especially strong.

### Wire Nails.

The market for Wire Nails is not as strong and regular as could be desired, and quotations, which have lately been pretty well maintained, are now shaded. While the price, \$2.70 in carload lots, remains the nominal quotation, concessions are more or less freely made by some, at least, of the manufacturers.

### Barb Wire.

Prices in this market are quite well maintained for regular trade. The demand continues good, and most of the mills are well occupied with orders. Quotations are as before: 4 cents for Galvanized Four-Point in carload lots; 4.15 cents in 3-ton lots, and 4.30 cents in small lots.

### Cut Nails.

The New York market is fairly active, but continues somewhat irregular, owing to the offerings of a few small mills. We quote \$1.90 @ \$1.95 for carload lots from dock, and \$1.95 @ \$2 for small lots from store. The schedule of extras published in our last issue is the list now in force.

### Ammunition.

The Ammunition market has been well maintained for some time, the association prices being in most cases adhered to, securing to the trade throughout the country a fair profit, while at the same time the manufacture of the goods has been remunerative. The irregularities which have existed have not been different from those which have for a long time prevailed, there being a few houses which more or less openly offered concessions from association rates, while a good many buyers, one way or another, obtained special discounts. This condition of things, while it has been contrary to the policy of the association, has been tolerated where it could not be prevented, inasmuch as the existing arrangement, in spite of these drawbacks, was profitable to the manufacturers, while it gave regularity to prices which without it would inevitably be badly demoralized. There has been, however, recently a good deal of dissatisfaction on the part of the E. C. Meacham Arms Company, of St. Louis, one of the Special dealers who handle a large amount of Ammunition. This dissatisfaction has been, it is understood, in part at least, on account of certain restrictions which have recently been placed upon the operation of the special houses in general, with a view especially, it is claimed, to limit the operations of the Meacham Company. One of these restrictions has been prohibiting the Western special houses from selling goods in the seaboard States, a line of business which had been done by the Meacham Company to a greater or less extent. Another modification of the original plan of the association makes it necessary for the A houses to buy at least one-third of their Cartridges from the manufacturers, leaving them at liberty to buy two-thirds only from the special houses. This requirement is insisted upon by the association because of the tendency of the trade to buy a very large proportion of their goods from the special dealers, leaving the manufacturers comparatively little direct business, but it has been strenuously objected to by the Meacham Company as an onerous provision, and one which interfered seriously with the sale of the goods to their

largest customers, from the fact that it is necessary for them to buy in carload lots in order to obtain the most advantageous freight rates. The company also in common with many other dealers objected to the rigid system of the association in the regulation of their business, and the curtailing of their freedom of action in trade. The conviction that they were likely to become more and more under the power of the association unless effective resistance were promptly made is probably another reason for the action referred to below. This dissatisfaction culminated in the issue last week, under date 21st inst., of the following postal card, which was sent, as we understand, to houses on the "A" list of the association:

### THE AMMUNITION MONOPOLY DEFIED.

#### NO ASSOCIATION REBATE.

Discount from list prices. 15 case lots or over.

Rim Fire, Ball and Shot Cartridges, 50&10&5 %  
Central Fire Cartridges, pistol size, Ball and  
shot.....25&10&5 %  
Central Fire Cartridges, military sizes, ball  
and shot.....15&10&5 %  
Blank Cartridges, 22 caliber....\$1.75, less 10 %  
Blank Cartridges, 32 caliber rim. 3.50, less 10 %  
Club Paper Shells, 10 and 12 gauge,  
33 1/2 %&10&5 %

First Quality Brass Shells.....60 & 10 %  
Club or Rival Brass Shells.....65&10 %  
Flobert Caps, Round.....\$1.75, less 10 %  
Flobert Caps, Conical.....2.00, less 10 %  
Berdan and Sturtevant Primers- 1.00, less 10 %  
Primers, all others.....1.20, less 10 %

No orders filled for less than 15 cases in one shipment at above prices.

*Prefer kicking before the last breath is squeezed out of us.*

E. C. MEACHAM ARMS COMPANY,  
St. Louis, Mo.

Terms—Spot cash, 2 %. In effect May 21, 1888.

It will be seen that this circular offers Ammunition in St. Louis at association best prices, with all rebates off, so that those to whom the offer is made can buy Ammunition of the company and obtain their rebate at once, and at the same price to them as if bought directly from the manufacturer.

In view of this action on the part of the E. C. Meacham Arms Company, the Ammunition Manufacturers' Association have issued a circular, under date May 21, which has been sent to their contract houses, in which they allude to the above action as a violation of the company's agreement and as causing discontinuance of the relations heretofore existing between that company and the association and their members. Notice is accordingly given that the name of the E. C. Meacham Arms Company has been stricken from the list of Special Houses, and that, therefore, no rebates will be paid by the association on any purchases hereafter made from the company. It is also stated that the association will rigidly maintain their present contracts with the remaining Special Houses, as well as with their regular contract houses. They call special attention to the clause in the contracts by which these contract houses have agreed to sell no Ammunition to any dealer after they have received notice that such dealer has violated his agreement and such houses are reminded that the sale by them of any Ammunition to the E. C. Meacham Arms Company will be a violation of the existing contracts with the association.

In this way they endeavor to prevent the company from obtaining a supply of goods, and are also, it is reported, encouraging the purchase of the stock now in the company's hands, with a view to exhausting it as soon as possible. In the meantime there is a good deal of speculation as to the extent of the Meacham supply, and advices differ widely on this point. The associated manufacturers profess confidence that this break will cause only lim-

ited and temporary disturbance, but it is generally regarded as a serious complication.

Another move in the same direction has been made by a Cleveland house, who have sent out the following announcement, also under date May 21:

### CARTRIDGES.

We offer these goods to our regular customers only at the following price, "subject to stock:"

Rim Fire Cartridges.....50&10 per cent.  
Central Fire Cartridges.....25&10 per cent.

In lots of 15 cases in one shipment, we will allow an extra 5 per cent. Terms ex. 2 per cent. 10 days. We will positively not fill orders for any one but regular customers at these prices. Our stock is all best association makes. Respectfully yours,

McINTOSH, HUNTINGTON & Co.,

May 21, 1888. Cleveland, Ohio.

An intimation to similar effect has been made more or less widely by the Alford & Berkele Company, 77 Chambers street, New York, who, we understand, are in a position to offer the same terms. Their announcement in regard to the matter has been made in the following form:

When wanting "U. M. C. Company," "W. R. A. Company," "U. S. C. Company," "Am. C. Co." or "E. R. & S." Ammunition, it will pay you to communicate with us. We are not in the combination and can cut under enough to make it an object for you to buy from us.

Advices received from the leading cities of the West are to the effect that this cut made by the E. C. Meacham Arms Company has not as yet seriously disturbed the market, its effect being limited for the most part to the producing of a feeling of uncertainty and the withholding of orders for Ammunition. Our information from St. Louis and Chicago is to the effect that the large dealers are not disposed to take any hasty action in the premises, but are waiting to ascertain what measures will be adopted by the association for their protection. The intimation is made that if an immediate settlement is not effected the market is likely soon to become seriously demoralized.

It is recognized that the Meacham Company are formidable antagonists, and the trade are awaiting with interest further developments. At the same time it is intimated that there is a better understanding between the leading members of the Ammunition Association than has sometimes existed, and this fact is regarded as having an important bearing upon the strength of the association, and its ability to maintain its control of the market. It remains to be seen whether or not they will see fit to take further action in the premises. The whole situation is receiving their careful attention. A meeting was held to-day, but no action relating to this matter is reported.

### Items.

Few articles in the Hardware line are more widely or more favorably known to the trade than Coes' Wrenches, which have been on the market for nearly 50 years. The original manufacturers of these goods were L. & A. G. Coes, Worcester, Mass. In 1869 this firm was dissolved, forming the two firms of L. Coes & Co. and A. G. Coes & Co., and these two houses have now been consolidated and incorporated under the laws of Massachusetts as the Coes Wrench Company. This company will continue to run the factories formerly operated by the above concerns, and have placed orders for new machinery for the purpose of increasing production. The high quality of goods manufactured will be maintained and improved, and with additional room and more machinery it is expected that the production will be largely increased. The officers of the corporation are: Loring Coes, president; John H. Coes, treasurer, and Fred. L. Coes, secretary, who are also the directors and stockholders. John H. Gra-





Elm City Japanned Pad Screws..... 50  
Water Hook Bolts, Silver, Nickel, Oreide,  
Brass, Japanned and X C..... 50  
It is also stated that on Gold-Capped or  
Plated Screws, Hame Rivets, Under-Plate  
Screws and Special Capped Rivets quota-  
tions will be furnished on application,  
stating quantity and assortment required.

The following are the list prices of  
Wood Door Knobs, Escutcheons, Shutter  
Knobs, Door Stops, Checking Spring  
Hinges, &c., manufactured by J. Bardsley,  
59 Elm street, New York. The goods are  
also sold by the Yale & Towne Mfg. Com-  
pany, 62 Reade street, New York, who  
have been agents for them for the past  
three years. The list as given below is  
subject to a discount of 33½ per cent.:

Nos. Wood Door Knobs. Per doz. pairs.	
101, 2¼-in. diam., Wood or Bronze Rose.	\$8.00
103, 2¼-in. diam., Wood or Bronze Rose.	8.00
105, 2¼-in. diam., Wood Rose.	6.00
116, 2¼-in. diam., Wood Rose.	6.50
Closet Knobs, with Spindles for Mortise or Rim	
Nos. Locks. Per doz.	
201, similar to Door Knob No. 101, Single.	\$4.25
208, similar to Door Knob No. 102, Single.	4.25
205, similar to Door Knob No. 105, Single.	3.25
216, similar to Door Knob No. 116, Single.	3.50
Screwless Fastening Knobs. Per doz.	
Nos. pairs.	
301, Plain Bronze Rose.	\$9.00
316, Wood, similar to No. 116, Rose.	7.50
Nos. Mortise Bolt Knobs. Per doz.	
217, 1¾-in. size.	
217, 1¾-in. size, with Bronze Rose style.	\$3.50
218, 1¾-in. size, as No. 105 Knob style.	4.25
218, 1¾-in. size, as No. 105 Knob style.	3.25
Nos. Escutcheons. Per doz.	
10, 2¼ x 1½ in., with drop, for brass key.	\$9.60
11, 2¼ x 1½ in., with drop, for steel key.	1.60
12, 1¾ x 1 in., without drop, for brass key.	.60
13, 1¾ x 1 in., without drop, for steel key.	.60
14, 1¾ x ¾ in., without drop, for brass key.	.60
15, 1¾ x ¾ in., without drop, for steel key.	.60
Shutter and Drawer Knobs, Hand Turned and	
Polished. Per doz.	
No. 120, ¾ inch diameter.	\$0.60
No. 121, 1½ inch diameter.	.70
No. 122, 1½ inch diameter.	.80
No. 123, 1½ inch diameter.	.90

#### Door Stops, Hand Turned and Polished.

No. 130, 3¼ inches long, for wall or base, per dozen.	\$1.00
No. 131, 3½ inches long, for wall or base.	\$1.20
No. 134, for floor.	1.20

#### Drawer Pulls.

No. 1098, 4 inches, per dozen.	\$5.00
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#### Patent Checking Spring Hinges for Double Act- ing Doors.

No. 1, suitable for doors up to 7 feet 6 inches high, 2 feet 9 inches wide and 2 inches thick, per door, complete.	\$17.00
No. 2, suitable for doors up to 8 feet high, 3 feet 8 inches wide and 2½ inches thick, per door, complete.	20.00

Some of the manufacturers of Chains are making revised quotations, which are slightly lower than those which have previously prevailed.

The trade will observe the description of the Hotchkiss Lemon Squeezer and Meat Press, which is given on page 860, and also the advertisement of John H. Graham & Co., 113 Chambers street, New York, who are agents for its sale. It is quoted at \$12 per dozen.

### Wire Netting and Fencing

The use of Wire Netting and Fencing, embracing all kinds of woven fabric made by twisting Wire into meshes, has grown with wonderful rapidity in this country in the past five years. It is by no means a new article of manufacture. It has been in use in Europe for many years. Australia consumes it annually by the thousand miles for sheep ranches and kangaroo fencing. Prior to 1883 it was imported in considerable quantities into this country from Europe, and strenuous attempts were made to popularize it. At that time it was being manufactured here to a limited extent, the Gilbert & Bennett Mfg. Company, of Georgetown, Conn., having embarked in the business some 15 years previously, with machinery for the production of all sizes. The Clinton Wire Cloth Company, of Clinton, Mass., and Sedgwick Brothers, of Richmond, Ind., also made Netting with coarse meshes for a few years prior to 1883, but the development of the business was very slow, owing to the low rate of duty on Wire products,

which enabled foreign manufacturers to control the trade. In 1883 this duty was changed to harmonize with the tariff on other manufactured products of a similar character, and the whole aspect of the trade was almost immediately altered.

As a result of the enlarged opportunity thus afforded to waiting capital, the number of manufacturers was increased. The establishments now engaged in turning out this fabric on this side of the Atlantic include the concerns above named and the Wright Wire Cloth Company, of Palmer, Mass.; New Jersey Wire Cloth Company, Trenton, N. J.; the McMullen Woven Wire Fence Company, of Chicago, and the California Wire Works, of San Francisco. All these manufacturers make a full line of Netting except the McMullen Wire Fence Company and Sedgwick Brothers, who confine their attention to coarse-meshed goods for fencing. In consequence of this development of the domestic manufacture the American production of Netting has increased tenfold, if not more, in the past five years; the consumption of Netting has greatly broadened, being now used for purposes wholly unanticipated but a short time since; the importation has fallen to practically nothing, while the consumer has been benefited by the reduction in price of at least 33½ per cent.

In the manufacture of Netting some establishments use galvanized Wire, while others galvanize the Wire after the fabric is woven, some advantage being claimed by those who use the latter process. The gauges of Wire used range from No. 20 to No. 13. The size of the meshes varies according to the use to which the Netting is to be put, ranging from ¼ inch to 5 inches. The width of the Netting usually made runs from 6 inches to 6 feet. When wider Netting is needed for a special purpose two widths are taken.

The Netting with meshes up to 1 inch in size is used for making a perforated or open surface on which to spread articles for drying, such as glue, cardboard, printed matter, tobacco, &c. Wire Glue Netting has completely revolutionized the mode of drying glue. The fine mesh Netting is also used for divisions in fish ponds, fish weirs and traps, and to keep birds from building nests around cupolas and the tops of buildings. The Netting with 1¼ to 1½ inch meshes is used for rabbit fencing, game inclosures, pigeon houses, aviaries, park cages, Wire partitions between parts of a room, &c. Two-inch meshes are a suitable size for poultry yards, coops, Wire trellises, lawn borders, pea or other vine supports, and for inclosing lawn tennis grounds. Coarser meshes are adapted to lawn and garden fencing, and even stock and farm and railroad fencing, being sufficiently strong to turn cattle. The manufacturers of Netting for fencing have thoroughly developed its capabilities in this line, and are furnishing gates to correspond with the Netting used, together with metal posts. Among the miscellaneous uses to which the various kinds of Netting are put can be mentioned office railings, desk railings, Wire signs, tree guards, borders for flower beds, croquet ground borders, ornamental summer houses, &c. It has been used with good effect in large public buildings to prevent an echo, being hung from the ceiling and almost invisible.

So rapidly are the uses multiplying to which Netting seems specially adapted, that the manufacturers are excusable for their enthusiasm over it. They look forward to the expansion of their industry to much larger proportions than it yet has attained. In many sections of the country its use has just begun. It is not an article that is used only by farmers and owners of extensive grounds, but its consumption is greatest in thickly-settled districts, and will increase with the growth of the country.

### Trade Topics.

A subscriber who is a Hardware merchant in Missouri refers to the very low prices that prevail in Hardware on account of overproduction, and also from the increasing disposition of merchants in other lines to handle Hardware and Stoves. Our correspondent advises that he is troubled by competition with furniture dealers and dry-goods merchants, who sell Stoves at about cost, and emphasizing the injury which is thus done to regular merchants. This is, unquestionably, an annoyance which is increasingly felt, and one in regard to which merchants in different localities will have to decide as to their proper defense. The course adopted by some of the dealers in Chicago, in which they retaliated by handling the lines of their competitors, will be borne in mind as one of the available methods. It is not unlikely that in this way something might be done to discourage this class of competition.

Another form in which competition shows itself is indicated in the following extract from the letter of a Hardwareman in Pennsylvania, in which reference is made especially to the disposition of jobbers to sell to consumers:

We notice a tendency on the part of jobbers in the large cities to dabble in the retail trade, thereby demoralizing legitimate trade. They send agents through the country to the retail trade, and if they cannot sell will go to the individual and sell to him, and, in many instances, after selling to the retail dealer, they have gone to the individual and sold to him also. This has been done by some who claim to be big jobbers.

A correspondent, an extract from whose letter we print below, alludes to the efforts of manufacturers to produce cheaper goods, and says:

There is one point particularly of interest to manufacturers, and that is that this same strife among them is not only found to exist in the trade, but has found its way to the consumer, in this way, that a constant reduction in prices of General Hardware has caused the consumer to be constantly on the lookout for something cheaper, so that to-day instead of having the question asked, "What have you that is better?" the almost invariable conservation is—"Well, that is very well made, but what have you that is cheaper?" and "Is this the cheapest you have?" The same disposition is found among mechanics in buying Tools. The time was when the mass of mechanics wanted the best Tools and those that were fully warranted; to-day the majority want cheap and low-priced ones without any guarantee as to quality.

From a letter relating to other matters received recently from a Hardware house on the Pacific Coast we make the following extract, in which our correspondents allude to an annoyance in connection with the handling of cheap Locks:

While we are writing we might as well call your attention, and through you the attention of the manufacturers, to an annoyance retailers experience by the cheap grade of Rim Locks being put up two small screws short. All the cheap Rim Locks we have handled for two years past have been that way. It is quite an annoyance, because the retailer, every time he sells a cheap Rim Lock has to remember that it is two screws short, making it necessary to open the wrappers and add the screws. Besides, he does not usually keep blued screws, and bright head screws don't look right on a japanned Escutcheon or Rose.

We have received from a Kansas Hardware merchant, who is a shrewd and intelligent observer, a letter in which he gives his impressions of the condition of things in the South, after an extended trip made early in the present year, and principally for pleasure and relaxation from engrossing attention to business. After giving information in regard to some of the principal points visited, our correspondent says:

In my judgment one great cause of slow trade is the fact that for several years every one has been buying real estate, and especially city property, not to improve but to sell. The reaction has come to the moneyed class, and, owing to pools, trusts and rings, the masses have been robbed until there is little money to



buy with. Strikes have in many instances prevented the investment of capital, until the strike has actually operated as a boomerang instead of a boom, for himself. Short crops and slow prices have been very injurious in many sections. Without any attempt to take a pessimistic view of the situation I must admit that during nine weeks of absence in nine States, traveling 5000 miles, only twice did I hear that trade was brisk. These exceptions were the cotton-seed oil mill at Nashville, and Cherry, Morrow & Co., who work the convicts 11 hours per day at the Nashville Penitentiary.

The trade will observe that on page 68 the Livingston Nail Company, 104 Reade street, New York, refer to the Western Horse Nails, and warn the trade against an inferior brand designated by the same name.

Horton, Gilmore, McWilliams & Co., Chicago, Ill., under date of May 19, issue a price current relating to Metals, Tin Shingles or Tiles, Lawn Mowers, Rakes, Tackle Blocks, Window Screens, Freezers and other seasonable goods, together with Russell & Erwin Mfg. Company's Burmese Bronze House Trimmings, and other articles.

Hibbard, Spencer, Bartlett & Co., Chicago, Ill., have issued a comprehensive trade circular relating to Fishing Tackle, in which are represented full lines of Rods of all grades from the common Fishing Pole to the fine Split Bamboo, Fishing Reels, Fish Hooks, Trolling Baits, of which an extensive variety is represented, Bass and Trout Flies, Fish Lines, Floats, Sinkers, Seines, Nets, and a large variety of miscellaneous specialties connected with this line. The pamphlet occupies 50 pages and is profusely illustrated.

### The Outlook for Trade.

We give below further extracts from recent letters from Hardware merchants in which they describe the condition of business in their respective localities, and express their views in regard to the probable future course of trade:

#### PENNSYLVANIA.

**Warren.**—At present, general business is fair. Since the shut-down in oil operations trade in that line has been very slack. For the past 10 or 12 years the prosperous condition of our town has depended largely upon the oil industry, but with the decline of that there is a large increase in amount of lumber manufactured. There is also considerable in the way of building in progress. Collections are not easy, but can generally be made. Taking all things into consideration, the outlook for a season of satisfactory trade is good.

**Carbondale.**—Business is fairly good and prospect for a good summer trade bright. There is considerable building going on, mostly, however, of the cheaper grade. Stocks in store rather light.

#### MICHIGAN.

**Kalamazoo.**—The prospects for building are good and fairly increasing. Stocks of Hardware kept in this locality are quite large. On account of the dry season last year and the backward spring this year money seems to be close. Consequently collections are somewhat slow.

**Donagiac.**—Crops are looking very fine. Building prospect fair as compared with other seasons. Collections will be slow owing to failure in last year's crops. The prospects for the season's crops and trade in general, we think, are fair compared with other seasons.

#### ILLINOIS.

**Bloomington.**—During the first three months of this year business was good in all departments in this section, and the general impression prevailed that we would have a good year's trade. But during April the situation changed somewhat, owing to the backwardness of the season, which retarded the sale of seasonable

goods and caused much uneasiness for fear of another dry summer. Should the conditions which now prevail continue there will be a serious business depression among the entire trade in this region. The ground at this writing is very dry and there is great need of rain. There is considerable building activity in some of the larger cities. Stocks are in good shape generally, merchants not being overloaded. They are not inclined to buy in large quantities, but prefer to sort up as the trade demand. Collections are only fair. Merchants generally, however, are in good condition, and their conservative course both in reference to buying goods and the matter of giving credit to the consumer has worked to their advantage. At present the outlook is puzzling, but we hope for a happy issue out of the difficulty.

**Taylorville.**—Trade is lighter than for five years in our line, and no prediction in regard to the outlook can be ventured until the corn crop gives some promise. Wheat will not yield over half a crop. Stocks of merchandise are in a healthy condition and ample for demands of trade. Collections are at the present time slow. The building outlook is not good and will not be of any strength before autumn. The general opinion is that business will be light for the year, but we live in hope.

**Marissa.**—Trade is looking up a little in Southern Illinois. The stocks of Hardware are about as full as usual. Collections are hard to make, and the outlook for building is not very promising. The wheat crop is nearer an entire failure than it has been for 20 years. The spring has been very cold and backward, and as a consequence oats and corn are late.

#### CONNECTICUT.

**New Britain.**—The spring trade is somewhat backward owing to cold weather, but the prospects are better for a large trade the coming season than for many years past, especially in the building line. Our manufacturers, nearly all of whom are in the Hardware line, are fairly busy, and several will increase their capacity this season. There are no overstocks of goods on hand, but all seem to be fairly stocked. Collections are fair and I think better than a year ago, and we feel that for a Presidential year 1888 will lead in this section.

#### DISTRICT OF COLUMBIA.

**Washington.**—General business is good, the volume of building here being greater than ever. There are many large and expensive buildings in course of erection. We think altogether prospects tend to an increase of business over last year. Collections are poor. This in a measure is due to the tardiness of good weather, keeping money back in hands of owners. There are several stores here in the building line that carry large and complete stocks of Hardware, and from appearances seem to be pretty full.

**Washington.**—Business was very dull in the early part of the year, owing to the bad weather, but is now very good generally, although collections are still slow. We note the absence of a boom in real estate such as we had last year, but prices are firm, and while there are not so many building permits issued as last year, the houses to be erected will be more costly. Stocks now seem to be quite full, but the small retailers were slow in placing their orders.

**Washington.**—The outlook for business seems to be encouraging. A large number of new buildings will be erected here this summer, as indicated by the issuing of permits, and there appears to be a feeling of confidence among business men generally. We do not find collections as good as could be desired, but hope for some improvement in this direction.

#### VERMONT.

**Middlebury.**—The state of business in this locality is not what it was one year ago and does not fulfill our expectation. Prospects for building are very limited, indeed. Buildings commenced in this town one year ago are yet unfinished and no new ones are being started of any consequence. As far as our knowledge goes, the stocks of General Hardware carried near us are larger than really necessary for the demand, but they are kept so with the hope that future trade may be larger and better. It is also an impossibility to collect, even from men who are reputed to be wealthy. In fact, throughout the State, which is wholly a farming district, the farmers seem to be badly pressed and loth to buy and ask for heavy credit, making general trade unprofitable and difficult to manage.

#### NEW YORK.

**Ithaca.**—Spring trade in our section is up to average and in our Stove line better than usual. Building is not booming and is hardly as extensive as usual. Hardware stocks are heavy as ever, and in many lines more extensive and complete. Each year some new lines are being added and old lines spread out. Collections are slow if you do not push them; they come in when you say they must come. Generally speaking, we expect our usual trade for 1888 and can see no reason why it will not come.

**Ogdensburg.**—Trade with us has been very fair so far this year. Building a little light. The stocks of Hardware are full, but will meet present demands only. Collections are very close and and very little money is in circulation.

**Watertown.**—Spring trade has hardly opened in this section, owing to the tardiness of the season. There are prospects for considerable building in this city and surrounding country, principally, however, of the moderate-priced class of dwellings. The merchants are carrying normal stocks, with little disposition to increase them, except as their needs demand. Collections are extremely backward and money close, with not much prospect of becoming easier. Should the coming season, however, prove auspicious to agricultural pursuits a marked improvement may be expected. The volume of trade generally compares favorably with previous years, but margins are smaller.

#### MAINE.

**Houlton.**—The prospect for business the coming spring and summer looks very well. There will be considerable building, not expensive houses, but those of moderate cost. We are not overstocked with goods. Collections have been very good so far. The farmers have been getting a good price for their produce, and thus have had money to pay their bills. The general feeling is that there will be a good trade the coming summer.

**Bridgeton.**—We anticipate a larger trade the coming season than ever before, although the season is two weeks later than the average. No great amount of new buildings, but summer resort establishments are being extensively enlarged and repaired. Collections about the same as for the past five years.

**Eastport.** Business in this vicinity is light and the prospects for the year 1888 are not very encouraging. Only necessary building will be put through, and that, after a season like 1887, will be limited. Dealers, generally speaking, are buying goods as they need them and are not laying in heavily with expectation of an increasing demand. The fact of a high rate of insurance materially shows itself here. Five per cent. is paid to insure wooden buildings, and very few will carry a large stock under like condition. Collections are slow, as all hereabouts are depending

upon a good season in our manufacturing industry to put money into circulation. Should the summer and fall give abundance of factory work, we shall expect business to brighten up considerably during the latter months of the year, and then feel that 1889 will be something to look forward to.

**Farmington.**—Our business has been better this spring than for the past two seasons, and there is a prospect of a good year's trade, although there will not be so much building in our section as last year. Stocks of Hardware are generally good. Collections are fair.

#### RHODE ISLAND.

**Providence.**—General trade from January 1 to date compares very favorably with that of last year. Stocks, as a rule, are full and complete, especially on seasonable goods. Collections seem to be better than usual for this time of the year.

#### MASSACHUSETTS.

**Pittsfield.**—We have the pleasure of reporting a steady increase in the volume of business for the last 18 months, and every prospect for a good summer trade. Building is lively and nearly all contractors have a full season's business booked. Collections are slow, however, and reports of three local banks show a decided falling off of deposits.

**Orange.**—Trade is about three or four weeks behind the season. Prospects for building quite good, but collections are hard. Stocks as large as ever.

**Hudson.**—Our business is ahead of last year, although not just what it should be, owing to a depression in the leather, rubber and boot and shoe manufacturing interests, which comprise the leading industries of this place. Building is very moderate, but the Agricultural Implement trade is very good, as the farmers had a very good year in 1887, with bright prospects for the ensuing season. Stocks full.

#### MISSOURI.

**Brookfield.**—More Builders' Hardware will be sold here this season than has been sold for years. Many new business houses are now being erected, besides many residences. The prospect for a good crop is encouraging to the farmer, and he is preparing to improve his farm by better buildings and fences. We had good crops here last year, which gives encouragement to the farmer this year. Taking all things in consideration we think the outlook much better than for some years.

**Carthage.**—Business in general is up to the usual standard for the time of year. Farmers are very busy at present in this section. The building prospect is fair and stocks of Hardware are up to the usual average. We find money matters and collections quite easy, as we buy and sell for cash. Many who do a credit business report collections only fair. Fruit, wheat, corn, grass, &c., never looked more favorable than at the present time, and our outlook is flattering.

**Hannibal.**—The outlook for the Hardware trade in our city is not very encouraging. The demand will be for absolute repairing, and there is no need of additional new buildings. The fall crops last year were a failure. So much so that in place of having to spare we had to buy, and that makes money matters rather tight. Hence there is not much building in the country. Farmers will save all they can on implements. What little prospect for business there was has been spoiled by various causes, thus delaying improvements.

#### OREGON.

**Baker City.**—The outlook for the season in the Hardware trade is good. Our Hardware and Implement stores are well stocked

at present. Collections are slow, but as good as usual for the time of year. Quite a number of new buildings in course of construction and many others contemplated, both residences and business houses.

**Salem.**—The condition of general business in this vicinity may be described as fair with rather light movement in all kinds of merchandise. Stocks of Hardware are fairly up to the requirements of the trade, and there will be only a limited amount of building this season. As this country does very little manufacturing, its dependence is mainly upon agriculture, and the low prices ruling the past few seasons for grain have been a considerable drawback to business. In addition to this, considerable damage was done by frost during the winter to the fall sown grain. For these reasons collections are difficult and will be until after the coming harvest.

#### WEST VIRGINIA.

**Fairmont.**—Trade in Hardware is late this spring. The prospects are good for a fair trade the balance of the year, with good crops, fully up to last year. Stocks of Hardware are generally light for this season, and the outlook for building is not as good as it was at this time last year. Collections have been only fair, a partial failure of crops in this section last year being the cause.

**Charlestown.**—Stocks of Hardware are good and as large as the section demands. Collections are easier than usual. Not much prospect of building. Prospect for a large wheat crop is good, and there exists a hopeful feeling in regard to the future.

**Parkersburg.**—While trade is a little quiet at present, the general business outlook in this section appears encouraging. There promises to be a fine wheat crop, and fruit was not seriously injured by the recent frosts. There are a great many new buildings in process of erection in this place and quite a number contemplated. Collections are slow and likely to remain so until after the marketing of the wheat crop.

#### IDAHO.

**Bellevue.**—Stocks of Hardware in this section are low, especially in heavy goods, such as Nails, Bar and Sheet Iron, Barb Wire and Horseshoes. Shelf goods are more plentiful. Collections are not entirely satisfactory. The prospect for good times is very good and we are all in good spirit.

#### LOUISIANA.

**Baton Rouge.**—Business in this section for the past year has been larger than ever before, not only in the Hardware trade, but in all lines. A large crop was made last season, which had a decided influence in placing business on a safer basis and giving a general feeling of confidence. Hardware stocks have been allowed to run down low, to pass over this and the ensuing months, which are very dull here. The prospects are good for a fine business during the coming fall and spring and we anticipate having even a larger trade than last season. There is no fictitious boom here, but a steady, substantial and safe growth, with happy prospects for a bright future.

#### KANSAS.

**Wellington.**—The prospect for an immense crop of everything was never better than at the present time. Wheat is simply marvelous, being four feet high and heading out. Corn looks fine, and will be a large crop. Business has been dull all winter, but is steadily growing better. There will be considerable building done this fall. Collections have been close, owing to failure in the crop last year, but confidence has been re-established by the bright prospect this spring.

### The Reduction in the Price of Pig Iron.

We have received the following communication from Warren, Wood & Co., 115 Broadway, New York:

The chief sensation to the readers of the somewhat bombastic proclamation of the Thomas Iron Company in the last issue of *The Iron Age* of a cut of \$2 per ton in the price of Foundry Iron would seem to be one of amazement that a company that has so long assumed to control the Eastern market and to have produced so much superior to anything made in the South, would so easily abandon its assumed position and turn in most "unheroic" flight, when only its "outposts" had been captured and before the fight had really opened. The giving back to their customers of \$2 per ton on their contracts for 120,000 tons of Iron is the clearest possible admission of their fear that some of their old "regulars" might be induced by fair prices to try a Tennessee or Alabama Iron, and thereby discover that they are in every particular equal to Thomas, and for many purposes are greatly its superior. The (alleged) heroic method of treatment in the desperate effort to "shut out the South" will not avail, for the great Ironmasters of that region, with their modern furnaces of immense capacity, can lay their Iron on dock in New York at less than its cost of production in the Lehigh or Schuylkill valleys and still have a margin of profit. There can be no question but that Tennessee and Alabama Irons have been introduced into the Eastern market to stay. If, however, Mr. Clarke insists on inaugurating a "war of prices" the result must not only be disastrous to him, but to all consumers who suffer so severely in a well published "war of prices," compelling them to make a much larger reduction on manufactured goods than the reduction they get off the price of Pig Iron. Nor is it always necessary even to meet Thomas prices, for sales of round lots of choice Tennessee Irons were made several days after Mr. Clarke's pronouncement was given to the world at \$19 ex-ship New York. The editorial assumption of *The Iron Age*, that Mr. Clarke's application of this cut in price to existing contracts will compel sellers of Southern Iron to take like action, is without foundation. They do not make "jug-handle" contracts, nor do their buyers ask it. As well might they ask to pay an advance price if the market should turn upward. They contract to deliver a specified quantity of Pig Iron at an agreed price. If the market advances the buyer gets every pound of his Iron as agreed, and if perchance the market drops he will, of course, "take the medicine," just as he would expect the furnace to do, hoping to catch them on the next turn. Taken altogether, this great "sensation of the week" seems to us very like a bit of "stage thunder," and not calculated to scare the audience, as they know it won't rain out where they are. To those furnaces that have made contracts agreeing to make a reduction of 50¢ less than any competitor, we cheerfully commend Mr. Clarke's action.

Henry Phipps, Jr., and Andrew Carnegie, of the firm of Carnegie, Phipps & Co., Limited, of Pittsburgh, sailed for Europe on Tuesday, the 22d inst., on a three months' trip. It is the intention of the party to make a tour of 700 miles through the highlands of Scotland by stage coach. Hon. James G. Blaine is expected to accompany the party.

Rumor has it that the interests of the Woodstock and Shelby charcoal properties in Alabama have been consolidated.



# CURRENT HARDWARE PRICES.

MAY 23, 1888.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

## Ammunition.

Caps, Perfection, 1000—	
Ricks & Goldmark's	
F. L. Waterproof, 1-10's	50¢
E. B. Trimmed Edge, 1-10's	55¢
E. B. Ground Edge, Central Fire, 1-10's	70¢
Double Waterproof, 1-10's	75¢
Musket Waterproof, 1-10's	85¢
G. D.	85¢
S. B.	85¢
Union Metallic Cartridge Co.	
P. C. Trimmed	50¢
F. L. Ground	55¢
Can. Fire Ground	70¢
Double Water-proof	75¢
Double Water-proof, in 1-10's	85¢
S. B. Genuine Imported	45¢
Eley's E. B.	55¢
Eley's D. Waterproof, Central Fire	\$1.00

## Cartridges.

Rim Fire Cartridges	dis 50¢
Rim Fire Military Cartridges	dis 15¢
Can. Fire Cartridges, Pistol and Rifle	dis 25¢
Can. Fire Cartr., Military & Sporting	dis 15¢
Blank Cartridges, except 25 and 32 cal., an additional 10¢ over above discounts	
Blank Cartridges 22 cal.	\$1.75, dis 2¢
Blank Cartridges 32 cal.	\$3.50, dis 2¢
Primed Shells and Bullets	dis 15¢
B. B. Caps, Round Ball	\$1.75, dis 3¢
B. B. Caps, Conical Ball, Swaged	\$2.00, dis 2¢

## Primers.

Berdan Primers all sizes, and R. L. Caps (for Sturtevant Shells)	\$1.00, dis 2¢
All other Primers, all sizes	\$1.20, dis 2¢

## Shells.

First quality, 4, 8, 10 and 12 gauge	dis 25¢
First quality, 14, 16 and 20 gauge (\$10 list)	dis 30¢
Star, Club, Rival and 10-gauge, \$9 list	dis 35¢
Climax Brands, 12 gauge, \$8 list	dis 35¢
Club, Rival and Climax Brands, 14, 16 and 20 gauge	dis 30¢
Seibold's Combination Shot Shells	dis 15¢
Brass Shot Shells, list quality	dis 60¢
Brass Shot Shells, Club, Rival and Climax	dis 65¢
Shells Loaded	
List No. 19, 1887	dis 20¢

## #ads—

U. M. C. & W. R. A.—B. E., 11 up	\$2.00
U. M. C. & W. R. A.—B. E., 9 & 10	2.30
U. M. C. & W. R. A.—B. E., 7 & 8	2.60
U. M. C. & W. R. A.—P. E., 11 up	3.10
U. M. C. & W. R. A.—P. E., 9 & 10	4.00
U. M. C. & W. R. A.—P. E., 7 & 8	4.90
Eley's B. E., 11 up	\$1.75
Eley's P. E., 11 & 20	\$2.80

## Anvils.—Eagle Anvils.

Wright's	dis 95¢
Armstrong's Mouse Hole	dis 85¢
Armstrong's Mouse Hole, Extra	dis 115¢
Trenton	dis 95¢
Wilkinson's	dis 95¢
J. & Riley Carr. Patent Solid	dis 115¢

## Anvil Vise and Drill—

Millers Falls Co.	\$18.00, dis 20¢
Chester Anvil and Vise	dis 25¢
Allen Combined Anvil and Vise	dis 40¢
Moore & Barnes Mfg. Co.	dis 33½¢

## Augers and Bits.

Douglas Mfg. Co.	
New Haven Copper Co.	
Wm. A. Ives & Co.	dis 70¢
Humphreysville Mfg. Co.	
French, Swift & Co. (F. H. Beecher)	dis 55¢
Cook's, Douglas Mfg. Co.	dis 50¢
Cook's, New Haven Copper Co.	dis 50¢
Ives' Circular Lip	dis 60¢
Patent Solid Head	dis 30¢
C. E. Jennings & Co., No. 10, extension lip	dis 40¢
C. E. Jennings & Co., No. 30	dis 60¢
C. E. Jennings & Co., Auger Bits, in fancy boxes, 1/2 set, 3/4 quarter, No. 5, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100	dis 20¢
Lewis' Patent Single Twist	dis 45¢
Russell Jennings' Augers and Bits	dis 45¢
Imitation Jennings' Bits (new list)	dis 60¢
Pugh's Black	dis 20¢
Car Bits	dis 50¢
L'Hommedieu Car Bits	dis 15¢
Forstner Pat. Auger Bits	dis 10¢

## Bit Augers—

Ives	dis 25¢
French, Swift & Co.	dis 25¢
Douglas	dis 25¢
Bonney's Adjustable 1/2 dos. 24s	dis 40¢
Boars'	dis 20¢
Ives' Expansive, each \$4.50	dis 50¢
Universal Expansive, each \$4.50	dis 20¢
Wood's	dis 25¢
Expansive Bits—	
Clark's small, 18; large, 22	dis 35¢
Ives' No. 4, per dos., 50	dis 40¢
Swan's	dis 40¢
Stearns, No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100	dis 35¢
Stearns' No. 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100	dis 20¢

## Gimlet Bits—

Common	dis 25¢
Diamond	dis 25¢
"Be"	dis 25¢
Double Cut, Shepherd's	dis 45¢
Double Cut, C. T. Valley Mfg. Co.	dis 30¢
Double Cut, Hartwell's, 1/2 gro.	dis 35¢
Double Cut, Douglas	dis 40¢
Double Cut, Ives	dis 60¢

## Bit Stock Orbits—

Morse Twist Drills	dis 50¢
Standard	dis 50¢
Cleveland	dis 50¢
Syracuse, for metal	dis 50¢
Syracuse, for wood (wood list)	dis 30¢
Williams' or Holt's, for metal	dis 50¢
Williams' or Holt's, for wood	dis 40¢
Stp Augers and Bits—	
L'Hommedieu's	dis 15¢
Watrous's	dis 15¢
Neill's	dis 15¢
Neill's Ship Auger Pattern Car Bits	dis 15¢

## Twg Hatts.

wing Brass Ferrule	\$3.50 gross—dis 45¢
1/2 set Sewing, Short	\$1.00 gross—dis 40¢
1/2 set Sewing, Long	\$1.20 gross—dis 40¢
P tent Peg, Plain Top	\$1.00 gross—dis 45¢
P tent Peg, Leather Top	\$1.20 gross—dis 45¢

## Awls, Brad Nuts, &c.

Awls, Sewing, Common	gross \$1.70—dis 35¢
Awls, Shouldered Peg	gross \$2.45—dis 40¢
Awls, Patent Peg	gross \$3.65—dis 40¢
Awls, Shouldered Brad	\$2.70 gross—dis 35¢
Awls, Handled Brad	\$7.50 gross—dis 45¢
Awls, Handled Scratch	\$7.50 gross—dis 35¢
Awls, Socket Scratch	\$1.50 gross—dis 25¢

## Awl and Tool Sets.

Allen's Sets, Awls & Tools, No. 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100	dis \$10—dis 50¢
Tray's Ad Tool Hds., Nos. 1, 1 1/2, 2, 2 1/2, 3, 3 1/2, 4, 4 1/2, 5, 5 1/2, 6, 6 1/2, 7, 7 1/2, 8, 8 1/2, 9, 9 1/2, 10, 10 1/2, 11, 11 1/2, 12, 12 1/2, 13, 13 1/2, 14, 14 1/2, 15, 15 1/2, 16, 16 1/2, 17, 17 1/2, 18, 18 1/2, 19, 19 1/2, 20, 20 1/2, 21, 21 1/2, 22, 22 1/2, 23, 23 1/2, 24, 24 1/2, 25, 25 1/2, 26, 26 1/2, 27, 27 1/2, 28, 28 1/2, 29, 29 1/2, 30, 30 1/2, 31, 31 1/2, 32, 32 1/2, 33, 33 1/2, 34, 34 1/2, 35, 35 1/2, 36, 36 1/2, 37, 37 1/2, 38, 38 1/2, 39, 39 1/2, 40, 40 1/2, 41, 41 1/2, 42, 42 1/2, 43, 43 1/2, 44, 44 1/2, 45, 45 1/2, 46, 46 1/2, 47, 47 1/2, 48, 48 1/2, 49, 49 1/2, 50, 50 1/2, 51, 51 1/2, 52, 52 1/2, 53, 53 1/2, 54, 54 1/2, 55, 55 1/2, 56, 56 1/2, 57, 57 1/2, 58, 58 1/2, 59, 59 1/2, 60, 60 1/2, 61, 61 1/2, 62, 62 1/2, 63, 63 1/2, 64, 64 1/2, 65, 65 1/2, 66, 66 1/2, 67, 67 1/2, 68, 68 1/2, 69, 69 1/2, 70, 70 1/2, 71, 71 1/2, 72, 72 1/2, 73, 73 1/2, 74, 74 1/2, 75, 75 1/2, 76, 76 1/2, 77, 77 1/2, 78, 78 1/2, 79, 79 1/2, 80, 80 1/2, 81, 81 1/2, 82, 82 1/2, 83, 83 1/2, 84, 84 1/2, 85, 85 1/2, 86, 86 1/2, 87, 87 1/2, 88, 88 1/2, 89, 89 1/2, 90, 90 1/2, 91, 91 1/2, 92, 92 1/2, 93, 93 1/2, 94, 94 1/2, 95, 95 1/2, 96, 96 1/2, 97, 97 1/2, 98, 98 1/2, 99, 99 1/2, 100, 100 1/2, 101, 101 1/2, 102, 102 1/2, 103, 103 1/2, 104, 104 1/2, 105, 105 1/2, 106, 106 1/2, 107, 107 1/2, 108, 108 1/2, 109, 109 1/2, 110, 110 1/2, 111, 111 1/2, 112, 112 1/2, 113, 113 1/2, 114, 114 1/2, 115, 115 1/2, 116, 116 1/2, 117, 117 1/2, 118, 118 1/2, 119, 119 1/2, 120, 120 1/2, 121, 121 1/2, 122, 122 1/2, 123, 123 1/2, 124, 124 1/2, 125, 125 1/2, 126, 126 1/2, 127, 127 1/2, 128, 128 1/2, 129, 129 1/2, 130, 130 1/2, 131, 131 1/2, 132, 132 1/2, 133, 133 1/2, 134, 134 1/2, 135, 135 1/2, 136, 136 1/2, 137, 137 1/2, 138, 138 1/2, 139, 139 1/2, 140, 140 1/2, 141, 141 1/2, 142, 142 1/2, 143, 143 1/2, 144, 144 1/2, 145, 145 1/2, 146, 146 1/2, 147, 147 1/2, 148, 148 1/2, 149, 149 1/2, 150, 150 1/2, 151, 151 1/2, 152, 152 1/2, 153, 153 1/2, 154, 154 1/2, 155, 155 1/2, 156, 156 1/2, 157, 157 1/2, 158, 158 1/2, 159, 159 1/2, 160, 160 1/2, 161, 161 1/2, 162, 162 1/2, 163, 163 1/2, 164, 164 1/2, 165, 165 1/2, 166, 166 1/2, 167, 167 1/2, 168, 168 1/2, 169, 169 1/2, 170, 170 1/2, 171, 171 1/2, 172, 172 1/2, 173, 173 1/2, 174, 174 1/2, 175, 175 1/2, 176, 176 1/2, 177, 177 1/2, 178, 178 1/2, 179, 179 1/2, 180, 180 1/2, 181, 181 1/2, 182, 182 1/2, 183, 183 1/2, 184, 184 1/2, 185, 185 1/2, 186, 186 1/2, 187, 187 1/2, 188, 188 1/2, 189, 189 1/2, 190, 190 1/2, 191, 191 1/2, 192, 192 1/2, 193, 193 1/2, 194, 194 1/2, 195, 195 1/2, 196, 196 1/2, 197, 197 1/2, 198, 198 1/2, 199, 199 1/2, 200, 200 1/2, 201, 201 1/2, 202, 202 1/2, 203, 203 1/2, 204, 204 1/2, 205, 205 1/2, 206, 206 1/2, 207, 207 1/2, 208, 208 1/2, 209, 209 1/2, 210, 210 1/2, 211, 211 1/2, 212, 212 1/2, 213, 213 1/2, 214, 214 1/2, 215, 215 1/2, 216, 216 1/2, 217, 217 1/2, 218, 218 1/2, 219, 219 1/2, 220, 220 1/2, 221, 221 1/2, 222, 222 1/2, 223, 223 1/2, 224, 224 1/2, 225, 225 1/2, 226, 226 1/2, 227, 227 1/2, 228, 228 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585 1/2, 586, 586 1/2, 587, 587 1/2, 588, 588 1/2, 589, 589 1/2, 590, 590 1/2, 591, 591 1/2, 592, 592 1/2, 593, 593 1/2, 594, 594 1/2, 595, 595 1/2, 596, 596 1/2, 597, 597 1/2, 598, 598 1/2, 599, 599 1/2, 600, 600 1/2, 601, 601 1/2, 602, 602 1/2, 603, 603 1/2, 604, 604 1/2, 605, 605 1/2, 606, 606 1/2, 607, 607 1/2, 608, 608 1/2, 609, 609 1/2, 610, 610 1/2, 611, 611 1/2, 612, 612 1/2, 613, 613 1/2, 614, 614 1/2, 615, 615 1/2, 616, 616 1/2, 617, 617 1/2, 618, 618 1/2, 619, 619 1/2, 620, 620 1/2, 621, 621 1/2, 622, 622 1/2, 623, 623 1/2, 624, 624 1/2, 625, 625 1/2, 626, 626 1/2, 627, 627 1/2, 628, 628 1/2, 629, 629 1/2, 630, 630 1/2, 631, 631 1/2, 632, 632 1/2, 633, 633 1/2, 634, 634 1/2, 635, 635 1/2, 636, 636 1/2, 637, 637 1/2, 638, 638 1/2, 639, 639 1/2, 640, 640 1/2, 641, 641 1/2, 642, 642 1/2, 643, 643 1/2, 644, 644 1/2, 645, 645 1/2, 646, 646 1/2, 647, 647 1/2, 648, 648 1/2, 649, 649 1/2, 650, 650 1/2, 651, 651 1/2, 652, 652 1/2, 653, 653 1/2, 654, 654 1/2, 655, 655 1/2, 656, 656 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728, 728 1/2, 729, 729 1/2, 730, 730 1/2, 731, 731 1/2, 732, 732 1/2, 733, 733 1/2, 734, 734 1/2, 735, 735 1/2, 736, 736 1/2, 737, 737 1/2, 738, 738 1/2, 739, 739 1/2, 740, 740 1/2, 741, 741 1/2, 742, 742 1/2, 743, 743 1/2, 744, 744 1/2, 745, 745 1/2, 746, 746 1/2, 747, 747 1/2, 748, 748 1/2, 749, 749 1/2, 750, 750 1/2, 751, 751 1/2, 752, 752 1/2, 753, 753 1/2, 754, 754 1/2, 755, 755 1/2, 756, 756 1/2, 757, 757 1/2, 758, 758 1/2, 759, 759 1/2, 760, 760 1/2, 761, 761 1/2, 762, 762 1/2, 763, 763 1/2, 764, 764 1/2, 765, 765 1/2, 766, 766 1/2, 767, 767 1/2, 768, 768 1/2, 769, 769 1/2, 770, 770 1/2, 771, 771 1/2, 772, 772 1/2, 773, 773 1/2, 774, 774 1/2, 775, 775 1/2, 776, 776 1/2, 777, 777 1/2, 778, 778 1/2, 779, 779 1/2, 780, 780 1/2, 781, 781 1/2, 782, 782 1/2, 783, 783 1/2, 784, 784 1/2, 785, 785 1/2, 786, 786 1/2, 787, 787 1/2, 788, 788 1/2, 789, 789 1/2, 790, 790 1/2, 791, 791 1/2, 792, 792 1/2, 793, 793 1/2, 794, 794 1/2, 795, 795 1/2, 796, 796 1/2, 797, 797 1/2, 798, 798 1/2, 799, 799 1/2, 800, 800 1/2, 801, 801 1/2, 802, 802 1/2, 803, 803 1/2, 804, 804 1/2, 805, 805 1/2, 806, 806 1/2, 807, 807 1/2, 808, 808 1/2, 809, 809 1/2, 810, 810 1/2, 811, 811 1/2, 812, 812 1/2, 813, 813 1/2, 814, 814 1/2, 815, 815 1/2, 816, 816 1/2, 817, 817 1/2, 818, 818 1/2, 819, 819 1/2, 820, 820 1/2, 821, 821 1/2, 822, 822 1/2, 823, 823 1/2, 824, 824 1/2, 825, 825 1/2, 826, 826 1/2, 827, 827 1/2, 828, 828 1/2, 829, 829 1/2, 830, 830 1/2, 831, 831 1/2, 832, 832 1/2, 833, 833 1/2, 834, 834 1/2, 835, 835 1/2, 836, 836 1/2, 837, 837 1/2, 838, 838 1/2, 839, 839 1/2, 840, 840 1/2, 841, 841 1/2, 842, 842 1/2, 843, 843 1/2, 844, 844 1/2, 845, 845 1/2, 846, 846 1/2, 847, 847 1/2, 848, 848 1/2, 849, 849 1/2, 850, 850 1/2, 851, 851 1/2, 852, 852 1/2, 853, 853 1/2, 854, 854 1/2, 855, 855 1/2, 856, 856 1/2, 857, 857 1/2, 858, 858 1/2, 859, 859 1/2, 860, 860 1/2, 861, 861 1/2, 862, 862 1/2, 863, 863 1/2, 864, 864 1/2, 865, 865 1/2, 866, 866 1/2, 867, 867 1/2, 868, 868 1/2, 869, 869 1/2, 870, 870 1/2, 871, 871 1/2, 872, 872 1/2, 873, 873 1/2, 874, 874 1/2, 875, 875 1/2, 876, 876 1/2, 877, 877 1/2, 878, 878 1/2, 879, 879 1/2, 880, 880 1/2, 881, 881 1/2, 882, 882 1/2, 883, 883 1/2, 884, 884 1/2, 885, 8	

World's Best. \$ gross, No. 1, \$12.00; No. 2, \$24.00.  
No. 3, \$36.00. .... \$ 50.10  
Universal. .... \$ 35.25  
Domestic. .... \$ 22.50, \$ 45  
Champion. .... \$ 22.00, \$ 45

**Cards.**  
Horse and Curry. .... \$ 10 @ 10 & 10  
Cotton. .... New list, Aug., 1883, \$ 10  
Wool. .... \$ 10

**Carpet Stretchers.**  
Cast Steel, Polished. .... \$ 12.25  
Cast Iron, Steel Points. .... \$ 12.75  
Socket. .... \$ 12.75  
Bullard's. .... \$ 25 @ 25 & 10

**Carpet Sweepers.**  
Bissell No. 5. .... \$ 17.00  
Bissell No. 7 New Drop Pan. .... \$ 19.00  
Bissell Grand. .... \$ 23.00  
Grand Rapid. .... \$ 24.00  
Crown Jewel. .... No. 1, \$18; No. 2, \$19; No. 3, \$20  
Magic. .... \$ 15.00  
Jewel. .... \$ 17.00  
Mystic. .... \$ 16.00  
Ottawa. .... \$ 15.00  
Garland. .... \$ 18.00  
Parlor Queen. .... \$ 22.00  
Housewife's Delight. .... \$ 15.00  
Queen. .... \$ 16.00  
Queen, with band. .... \$ 18.00  
King. .... \$ 20.00  
Weed Improved. .... \$ 18.00  
Hub. .... \$ 16.00  
Cog Wheel. .... \$ 16.00

#### Cartridges.—See Ammunition.

**Casters.**  
Bed. .... New list:  
Plate. .... \$ 55 @ 55 & 25  
Shallow Socket. .... \$ 60 @ 60 & 25  
Deep Socket. .... \$ 60 @ 60 & 25  
Yale Casters, list May, 1884. .... \$ 50 @ 50 & 10  
Yale Casters. .... \$ 50 @ 50 & 10  
Yale Gem. .... \$ 60 @ 60 & 25  
Martin's Patent (Phoenix). .... \$ 45 @ 45 & 10  
Payson's Anti-friction. .... \$ 60 @ 60 & 10  
"Giant" Truck Casters. .... \$ 10 @ 10 & 25  
Stationary Truck Casters. .... \$ 45 @ 45 & 10

**Cattle Leaders.**  
Hudson, Beckley & Co.'s. .... \$ 70  
Sargent's. .... \$ 69 & 10  
Hutchins. .... \$ 30  
Peck Stow & W. Co. .... \$ 50 & 10

**Chain.**  
Trace, 6-10-2, exact sizes, \$ pair, \$1.03, \$ 50 @ 10 & 25  
Trace, 6-10-3, exact sizes, \$ pair, \$1.03, \$ 50 @ 10 & 75  
Trace, 7-10-2, exact sizes, \$ pair, \$1.11, \$ 50 @ 10 & 75  
Note.—Traces, "Regular" sizes \$ pair less than exact.

**Log, Fifth, Stretcher, and other fancy Chains, list Nov. 1, 1884.**  
American Coil 3-16 1/2 5-16 3/4 7-16 1/2 9-16 3/4  
In case lots, 9.00 4.30 5.25 4.60 4.40 4.20 3.95 3.75  
Less than exact lots, add 1/4 @ 1/4 \$ 1.11  
German Coil, list of June 30, 1887. .... \$ 50 @ 10 & 50  
Ger. Halter Chain, list of June 20, 1887. .... \$ 50 @ 10 & 50  
Covert Halter, Hitching and Breast. .... \$ 50 & 25  
Covert Traces. .... \$ 35 & 25  
Onesida Halter Chain. .... \$ 60 @ 60 & 5  
Sargisized Pump Chain. .... \$ 70 @ 70 & 5  
Jack Chain, Iron. .... \$ 70 @ 70 & 5  
Jack Chain, Brass. .... \$ 75 @ 75 & 5

**Chalk.**  
White. .... \$ 60  
Red. .... \$ 70  
Blue. .... \$ 80  
White Crayons. .... \$ 12 @ 12 & 10

#### Chalk Lines.—See Lines.

**Chisels.**  
Socket Framing and Firmer—  
P. S. & W. .... \$ 75 & 10  
New Haven and Middlesex. .... \$ 75 & 10  
Mix. .... \$ 30  
Buck Bros. .... \$ 30 @ 30 & 5  
Merrill. .... \$ 60 @ 60 & 10  
L. & J. White. .... \$ 30 @ 30 & 5  
Witherby and Douglass. .... \$ 75 @ 75 & 5  
Tanged Firmer. .... \$ 40 @ 40 & 10  
Tanged Firmer, Butcher's. .... \$ 45 @ 45 & 10  
Tanged Firmer, Spear & Jackson's. .... \$ 50 @ 50 & 10  
Tanged Firmer, Buck Bros. .... \$ 30  
Cold Chisels. .... \$ 16 @ 16 & 10

**Chucks.**  
Beach Patent. .... \$ 30.00, \$ 20  
Morris's Adjustable. .... \$ 7.00, \$ 20 @ 20 & 5  
Danbury. .... \$ 30.00, \$ 30 @ 30 & 5  
Syracuse, Bals Pat. .... \$ 25

**Clamps.**  
Providence Tool Co.'s Wrought Iron. .... \$ 25  
Adjustable, Gray's. .... \$ 20  
Adjustable, Lambert's. .... \$ 20  
Adjustable, Snow's. .... \$ 40 & 5  
Adjustable, Hammer's. .... \$ 15  
Adjustable, Stearns'. .... \$ 20 & 10  
Stearns' Adjustable Cabinet and Corner. .... \$ 20 & 10  
Cabinet, Sargent's. .... \$ 60 & 10  
Carriage Makers', Sargent's. .... \$ 60 & 10  
Eberhard Mfg. Co. .... \$ 40 & 5 @ 40 & 10  
Warner's. .... \$ 40 & 10 @ 40 & 10 & 5  
Saw Clamps. .... See Vises

**Clips.**  
Norway, Axle, 1/4 & 5-16. .... \$ 55 & 25  
Second grade Norway Axle, 1/4 & 5-16. .... \$ 55 & 25  
Superior Axle Clips. .... \$ 60 & 25 @ 60 & 25  
Norway Spring Bar Clips, 5-16. .... \$ 60 & 25  
Wrought-Iron Felloe Clips. .... \$ 50  
Steel Felloe Clips. .... \$ 50

**Cockeyes.** .... \$ 10 @ 10 & 5

**Cocks, Brass.** .... \$ 40 @ 40 & 10 & 25

**Coffee Mills.**  
Box and Side, list revised Jan., 1888. .... \$ 50 & 25  
American, Enterprise Mfg. Co. .... \$ 20 @ 20 & 10  
The "Swift," Lane Bros. .... \$ 20 & 10

**Compasses, Dividers, &c.**  
Compasses, Callipers, Dividers. .... \$ 70 @ 70 & 10  
Bemis & Call Co.'s Dividers. .... \$ 60 & 5  
Bemis & Call Co.'s Compasses & Callipers. .... \$ 50 & 5  
Bemis & Call Co.'s Wing & Inside or Outside. .... \$ 50 & 5  
Bemis & Call Co.'s Double. .... \$ 60  
Bemis & Call Co.'s (Call's Patent Inside). .... \$ 30  
Excelsior. .... \$ 50  
J. Stevens & Co.'s Callipers and Dividers. .... \$ 25 & 10

**Coppers' Tools.**  
Bradley's. .... \$ 20  
Barton's. .... \$ 20 @ 20 & 5  
L. & J. White. .... \$ 20 & 5  
Albertson Mfg. Co. .... \$ 25  
Beatty's. .... \$ 40 @ 40 & 5  
Sandusky Tool Co. .... \$ 30 @ 30 & 5

**Corkscrews.**  
Hudson & Beckley Mfg. Co. .... \$ 40 @ 40 & 10  
Clough's Patent. .... \$ 39 & 45 @ 39 & 45  
Horse Bros. & Hubert. .... \$ 35

**Corn Knives and Cutters.**  
Bradley's. .... \$ 10  
Wadsworth's. .... \$ 25

**Cradles.—Grain.** .... \$ 50 @ 10 & 5

**Crow Bars.**  
Cast Steel. .... \$ 45  
Iron, Steel Points. .... \$ 35

**Curry Combs.**  
Fitch. .... \$ 50 @ 10 @ 50 & 10  
Rubber. .... \$ 10.00, \$ 20  
Perfect. .... \$ 50

**Curtain Pins.**  
Silvered Glass. .... net  
White Enamel. .... net

**Cutlery.**  
Beaver Falls and Booth's. .... \$ 34  
Wostenholme. .... \$ 7.75 @ 5

**Dampers, &c.**  
Dampers, Buffalo. .... \$ 50  
Buffalo Damper Clips. .... \$ 40  
Crown Damper. .... \$ 40  
Excelsior. .... \$ 40 & 10  
See Compasses.

**Doors.**  
Embossed Gilt, Pope & Stevens' list. .... \$ 30 & 10  
Leather, Pope & Stevens' list. .... \$ 40  
Brass, Pope & Stevens' list. .... \$ 40

**Door Springs.**  
Torrey's Rod, regular size. .... \$ 1.30  
Gray's. .... \$ 20.00, \$ 20  
Hoe Rod. .... \$ 20.00, \$ 20  
Warner's No. 1, \$ 20.00; No. 2, \$ 3.30, \$ 40 & 10 @ 50  
Gem (Coll), list April 19, 1888. .... \$ 10  
Star (Coll), list April 19, 1888. .... \$ 20  
Victor (Coll). .... \$ 60 @ 60 & 10  
Champion (Coll). .... \$ 60 @ 60 & 10  
Philadelphia. .... \$ 5 in. \$ 5.00; 8 in. \$ 7.75, \$ 10  
Cowell's. .... No. 1, \$ 18.00; No. 2, \$ 15.00, \$ 50  
Rubber, complete. .... \$ 4.50, \$ 55 & 10  
Hercules. .... \$ 50  
Shaw Door Check and Spring. .... \$ 25 @ 30 @ 35  
Elliot's Door Check and Spring. .... \$ 25

**Drawing Knives.**  
P. S. & W. .... \$ 75 & 10  
New Haven and Middlesex. .... \$ 75 & 10  
Merrill. .... \$ 60 @ 60 & 10  
Standards. .... \$ 75 @ 75 & 10  
Watrous. .... \$ 15 @ 10 @ 25  
L. & J. White. .... \$ 20 & 5  
Bradley's. .... \$ 35  
Adjustable Handle. .... \$ 20 @ 25  
Wilkinson's Folding. .... \$ 25 @ 25 & 5

**Drills and Drill Stocks.**  
Blacksmith's. .... \$ 1.75  
Blacksmith's Self-Feeding. .... \$ 7.50, \$ 10  
Breast, P. S. & W. .... \$ 20  
Breast, Wilson's. .... \$ 30 & 5  
Breast, Miller's. .... \$ 30.00, \$ 25  
Breast, Bartholomew's. .... \$ 25.00, \$ 25  
Ratchet, Morrill's. .... \$ 20 @ 20 & 5  
Ratchet, Ingersoll's. .... \$ 25  
Ratchet, Parker's. .... \$ 20 @ 20 & 5  
Ratchet, Whitney's. .... \$ 20 @ 20 & 5  
Ratchet, Weston's. .... \$ 20 @ 20 & 5  
Ratchet, Moore's Triple Action. .... \$ 25 @ 25 & 5  
Whitney's Hand Drill, Plain, \$1.00, Adjustable, \$1.20. .... \$ 20 & 10  
Wilson's Drill Stocks. .... \$ 1  
Automatic Boring Tools. .... \$ 1.75 @ 1.50

**Drill Bits.—See Augers and Bits.**  
Drill Chucks.—See Chucks.

**Dripping Pans.**  
Small sizes. .... \$ 7  
Large sizes. .... \$ 10

**Egg Beaters.**  
Beaver. .... \$ 20  
National. .... \$ 4.50, \$ 10, \$ 20  
Family (T. & S. Mfg. Co.). .... \$ 17.00 @ 18.00  
Standard. .... \$ 49.00  
Kington (Standard Co.). .... \$ 46.50  
Acme (Standard Co.). .... \$ 46.00  
Duplex (Standard Co.). .... \$ 48.00  
Rival (Standard Co.). .... \$ 42.00  
Triumph (T. & S. Mfg. Co.). .... \$ 10.50 @ 11.50  
Advance No. 1. .... \$ 10.00  
Advance No. 2. .... \$ 10.00  
Bryant's. .... \$ 15.00  
Ayres' Spiral. .... \$ 15.00  
Double (Hamblin & Russell Mfg. Co.). .... \$ 16.20  
Easy (Hamblin & Russell Mfg. Co.). .... \$ 14.00  
Triple (Hamblin & Russell Mfg. Co.). .... \$ 16.20  
Spiral (Hamblin & Russell Mfg. Co.). .... \$ 14.50  
Paine, Diehl & Co.'s. .... \$ 24.00

**Electric Bell Sets.—Wollenhaek's.**  
Bigelow & Dowse. .... \$ 15  
Emery. .... \$ 4 to 15  
No. 4 to 15. .... \$ 4 to 15  
No. 15 to 40. .... \$ 15 to 40  
No. 40 to 150. .... \$ 15 to 40  
No. 150 to 400. .... \$ 40 to 150  
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Best Anti-Friction.....dis 60  
Duplex (Wood Track).....dis 60  
Terry's Patent.....dis 60  
Cronk's Patent.....No. 4, 112; No. 5, 114.40; No. 6, 115.40  
Wood Track Iron Clad.....dis 50.10 @ 50.15  
Carrier Anti-Friction.....dis 50.10 @ 50.15  
Architect.....set \$0.00, dis 20  
Eclipse.....set \$4.50, dis 20  
Felix.....set \$4.50, dis 20  
Richards.....dis 50.10 @ 50.15  
Lane's Steel Anti-Friction.....dis 40.10  
The Ball Bearing Door Hanger.....dis 20.10 @ 25.10  
Warner's Patent.....dis 20.10 @ 25.10  
Stearns' Anti-Friction.....dis 20.10 @ 25.10  
Stearns' Chaf'enge.....dis 25.10 @ 25.10  
Faulstich.....dis 25.10 @ 25.10  
American.....set \$0.00, dis 20.10  
Rider & Wooster, No. 1, 62 1/2; No. 2, 75.....dis 40  
Paragon, Nos. 1, 2 and 3.....dis 40.10  
Paragon, Nos. 5, 6, 7 and 8.....dis 40.10  
Crescent.....dis 60.10 @ 60.15  
Nickel Coat Iron.....dis 50 @ 50.50  
Nickel Malleable Iron and Steel.....dis 40  
Scranton Anti-Friction Single Strap.....dis 35  
Scranton Anti-Friction Double Strap.....dis 40  
Universal Anti-Friction.....dis 40

**Harness Snaps.**—See Snaps.

**Hatchets.**—List Jan. 1, 1886.  
Isaiah Blood.....dis 35 @ 40  
Hunt's Shingling Lath and Claw.....dis 40.5  
Hunt's Broad.....dis 40  
Buffalo Hammer Co.....dis 40.10 @ 50  
Hurd's.....dis 40.10 @ 50  
Fayette R. Plumb.....dis 40.10 @ 50  
Wm. Mada, Jr., & Co.....dis 50 @ 50.50  
Underhill's Edge Tool Co.....dis 40.5 @ 40.10  
Underhill's Haines and Bright goods.....dis 33 1/2  
C. Hammond & Son.....dis 40.10 @ 50  
Simmons.....dis 40.10 @ 50  
Peck's.....dis 40.10 @ 40.10  
Kelly's.....dis 50 @ 50.50  
Sargent & Co.....dis 50  
Ten Eyck Edge Tool Co.....dis 40.10 @ 40.10  
Collins, following list.....dis 10  
Shingling, Nos. 1, 2, 3.....dis 55.50 @ 60.00 @ 65.50  
Claw, Nos. 1, 2, 3.....dis 6.00 @ 6.50  
Lathing, Nos. 1, 2, 3.....dis 8.50 @ 9.00 @ 9.50

**Hay Knives.**

Lightning.....dis 25. price \$0.18  
Electric.....dis 25. price \$0.18  
Gem.....dis 25. price \$0.18  
Wadsworth's.....dis 40.75 @ 40.10  
Carter's Needle.....dis 11.50 @ 12.00  
Heath's.....dis 13.50 @ 14.00

**Hinges.**

**Wrought Iron Hinges.**  
Strap and T.....dis 70.10 @ 70.10  
Screw Hook and 1/8, 10, 12 in.....dis 25  
Strap.....dis 25  
Heavy Welded Hook 1/8 to 12 in.....dis 25  
Screw Hook and Eye.....dis 25  
Rolled Blind Hinges, Nos. 32 and 34.....dis 50.10  
Rolled Blind Hinges, Nos. 32 and 34.....dis 50.10  
Rolled Plate.....dis 50.10  
Rolled Raised.....dis 50.10  
Plate Hinges 1/8, 10 and 12 in.....dis 5  
"Providence" 1/8, 10 and 12 in.....dis 5  
**Spring Hinges.**  
Geer's Springs and Blank Butts.....dis 50  
Union Springs Hinge Co.'s list, March, 1886.....dis 50  
Acme and Union.....dis 50  
Empire and Crown.....dis 50  
Hero and Mowarch.....dis 50  
American, Gem, and Star, Japaned.....dis 50  
American, Gem, and Star, Bronzed.....dis 50  
Oxford, Bronze and Brass.....dis 50  
Barker's Double Acting.....dis 50  
Union Mfg. Co.....dis 50  
Bommer's.....dis 50  
Buckman's.....dis 50  
Chicago.....dis 50  
**Gate Hinges.**  
Western.....dis 50.40, dis 55  
N. E.....dis 50.40, dis 55  
N. E. Reversible.....dis 50.40, dis 55  
Clark's, Nos. 1, 2, 3.....dis 50.10 @ 50.15  
N. Y. State.....dis 50.40, dis 55  
Automatic.....dis 50.40, dis 55  
Common Sense.....dis 50.40, dis 55  
Seymour's.....dis 50.40, dis 55  
Shepard's, Nos. 1, 2, 10 and 30, dis 60.10 @ 60.15  
Shepard's, No. 3.....dis 60.10 @ 60.15  
Reed's Latch and Hinges.....dis 50

**Blind Hinges.**

Parker.....dis 75.25  
Palmer.....dis 75.25  
Seymour.....dis 70.25  
Nicholson.....dis 45.10  
Huffer.....dis 50  
Clark's, Nos. 1, 3, 5, 10 and 50.....dis 75.10 @ 80.10  
Clark's Mortise Gravity.....dis 50  
Rargent's, Nos. 1, 3, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100.....dis 75.10 @ 100.10  
Rargent's, No. 12.....dis 75.10 @ 100.10  
Reading's Gravity.....dis 75.10 @ 100.10  
Shepard's "Noiseless" Nos. 50, 60, 65 @ 55.....dis 75.10 @ 100.10  
Shepard's Niagara Gravity, Nos. 1, 3 and 5.....dis 80  
Shepard's Buffalo Gravity, Nos. 1, 3 and 5.....dis 80.25  
Shepard's Champion Gravity No. 70.....dis 80.10 @ 80.15  
Shepard's Steamboat Gravity, No. 10.....dis 80.20  
Shepard's Acme Lull & Porter.....dis 75.50 @ 75.10  
Shepard's O. S. Lull & Porter.....dis 75.10  
Shepard's "Queen City" Reversible.....dis 70.10  
Clark's Lull & Porter, Nos. 9, 1, 1 1/2, 2, 3.....dis 75.10 @ 80.10  
North's Automatic Blind Fixture, No. 2, for Wood, \$10.50; No. 3, for Brick, \$13.50.....dis 25.25

**Keys.**

**Handled.**  
Garden, Mortar, &c.....dis 65.5  
Planter's, Cotton, &c.....dis 65.5  
Warren Hoe.....dis 65.5  
Magic.....dis 65.5  
**Key.**  
D. & H. Scovill.....dis 15  
Lane's Crescent Scovill Pattern.....dis 45  
Lane's Crescent Planter's Pattern.....dis 45  
Maynard.....dis 30  
Sandusky Tool Co., & O. Pat.....dis 60  
Hubbard & Co.....dis 60  
Bare.....dis 60  
Grab.....dis 60 @ 60.10

**Hog Rings and Rings.**

Hill's Improved Rings.....dis 55.50 @ 55.10  
Hill's Old Style Rings.....dis 55.50 @ 55.10  
Hill's Tongue.....dis 55.50 @ 55.10  
Hill's Rings.....dis 55.50 @ 55.10  
Perfect Rings.....dis 55.50 @ 55.10  
Perfect Rings.....dis 55.50 @ 55.10  
Blair's Hog Rings.....dis 55.50 @ 55.10  
Blair's Hog Rings.....dis 55.50 @ 55.10

Champion Rings.....dis 55.50  
Champion Rings, Double.....dis 55.50  
Brown's Rings.....dis 55.50  
Brown's Rings.....dis 55.50

**Holding Apparatus.**

"Moore's" Hand Holst, with Lock Brake.....dis 70  
"Moore's" Differential Pulley Block.....dis 4

**Holders. Tool.**

Balz Pat.....dis 34; dis 25

**Hollow-Ware.**

Sieve Hollow-Ware, Ground.....dis 60.10 @ 60.10  
Sieve Hollow-Ware, Unground.....dis 70.50 @ 70.10  
Kneaded and Tinned Hollow-Ware.....dis 70 @ 70.5  
Kettles.....dis 70 @ 70.5  
Oval Soilers, Saucepans & Glue Pots.....dis 40.5 @ 40.10  
Gray Enamelled Ware.....dis 10 @ 40.5  
Acute and Granite Ware.....dis 25  
Rustless Hollow-Ware.....dis 50 @ 50.5  
Galvanized Tea-Kettles.....dis 50 @ 50.5  
Inch.....dis 50 @ 50.5  
Each.....dis 50 @ 50.5  
Silver Plated—4 mo. or 5 1/2 oash in 30 days.....dis 40.5  
Meriden Britannia Co.....dis 40.5  
Simpson, Hall, Miller & Co.....dis 40.5  
Rogers & Brother.....dis 40.5  
Hartford Silver Plate Co.....dis 40.5  
William Rogers Mfg. Co.....dis 40.5

**Hooks.**

**Cast Iron.**  
Bird Cage, Sargent's list.....dis 60.10 @ 60.10  
Bird Cage, Reading.....dis 60.10 @ 60.10  
Clothes Line, Sargent's list.....dis 60.10 @ 60.10  
Clothes Line, Reading list.....dis 60.10 @ 60.10  
Celling, Sargent's list.....dis 55.10 @ 55.10  
Harnes, Reading list.....dis 55.10 @ 55.10  
Coat and Hat, Sargent's list.....dis 55.10 @ 55.10  
Coat and Hat, Reading.....dis 55.10 @ 55.10  
**Wrought Iron.**  
Cotton.....dis 50.10 @ 50.10  
Cotton Pat. Y. Hall & Handle Wks.....dis 50.10 @ 50.10  
Tassel and Picture T. & S. Mfg. Co.....dis 50.10 @ 50.10  
Wrought Staples, Hooks, &c.....dis 50.10 @ 50.10  
Bench Hooks.....dis 50.10 @ 50.10

**Wire.**

Wire Coat and Hat, Gem, list April, 1886.....dis 45  
Wire Coat and Hat, Miles, list April, 1886.....dis 45  
Indestructible Coat and Hat.....dis 45  
Wire Coat and Hat, Standard.....dis 45  
Grass.....dis 55 @ 60  
Whitcomb—Patent.....dis 55 @ 60  
Hooks and Eyes—Malleable iron.....dis 70 @ 70.10  
Hooks and Eyes—Brass.....dis 60.10 @ 60.10  
Fish Hooks, American.....dis 50

**Horse Nails.**

Nos. 6, 7, 8, 9, 10  
Ausable.....dis 25.10 @ 25.10  
Clifton Fin.....dis 25.10 @ 25.10  
Essex.....dis 25.10 @ 25.10  
Lyra.....dis 40.10 @ 40.10  
Snowden.....dis 40.10 @ 40.10  
Putnam.....dis 50.10 @ 50.10  
Vulcan.....dis 50.10 @ 50.10  
Western.....dis 50.10 @ 50.10  
Globe.....dis 50.10 @ 50.10  
A. C.....dis 50.10 @ 50.10  
C. R. K.....dis 50.10 @ 50.10  
Champion.....dis 50.10 @ 50.10  
New Haven.....dis 50.10 @ 50.10  
Barnes.....dis 50.10 @ 50.10  
Champion.....dis 50.10 @ 50.10  
Capwell.....dis 50.10 @ 50.10  
Star.....dis 50.10 @ 50.10  
Anchor.....dis 50.10 @ 50.10  
Western.....dis 50.10 @ 50.10  
Empire Bronzed.....dis 50.10 @ 50.10

**Horse Shoes.**—See Shoes, Horse.

**Hose, Rubber, competition.**.....dis 75.1 @ 80  
Standard.....dis 75.1 @ 80  
Extra.....dis 75.1 @ 80  
N. Y. B. & P. Co., Para.....dis 75.1 @ 80  
N. Y. B. & P. Co., Extra.....dis 75.1 @ 80  
N. Y. B. & P. Co., Dundee.....dis 75.1 @ 80

**Ice Picks, Chisels, &c.**

Am. Ice Chisel Pold.....dis 3.00, dis 2 @ 20.25  
National Ice Chisel.....dis 3.00, dis 2 @ 20.25  
Sorensen Ice Breakers.....dis 3.00, dis 2 @ 20.25  
Dunlap's Ring Picks.....dis 3.00, dis 2 @ 20.25  
Wood Head Picks, Sargent's.....dis 3.00, dis 2 @ 20.25  
Iron Head Picks, Sargent's.....dis 3.00, dis 2 @ 20.25  
Ice Mallets, Pick in handle.....dis 3.00, dis 2 @ 20.25  
Ice Axes, Small Cast or Mail.....dis 3.00, dis 2 @ 20.25  
Combination Ice Tools.....dis 3.00, dis 2 @ 20.25  
Acme Ice Pick and Tongs.....dis 3.00, dis 2 @ 20.25  
Rogers' Lightning Ice Chisel.....dis 3.00, dis 2 @ 20.25

**Ice Tongs.**

Champion, S. S. & Co.....dis 3.00, dis 2 @ 20.25  
Family.....dis 3.00, dis 2 @ 20.25

**Jack Screws.**—See Screws.

**Kettles.**.....Spun, Stamped.  
Brass 7 to 17 in.....dis 25 @ 30  
Enamelled and Tea Kettles.....dis 25 @ 30

**Keys.**

Lock Ass'n list Dec. 30, 1886.....dis 50.10 @ 60.5  
Eagle, Cabinet, Trunk and Padlock.....dis 33.5 @ 40  
Hotchkiss' Brass Blanks.....dis 40  
Hotchkiss' Copper and Tinned.....dis 40  
Hotchkiss' Padlock and Cabinet.....dis 35  
Ratchet Bed Keys.....dis 40.00, dis 15

**Kulite Sharpeners.**

Parkin's Applewood Handles.....dis 50.00, dis 40  
Parkin's Rosewood or Cocobolo.....dis 50.00, dis 40

**Knives.**

Wilson's Putter Knives.....dis 20 @ 25  
Ames' Butcher Knives.....dis 20 @ 25  
Nichols' Butcher Knives.....dis 20 @ 25  
Ames' Shoe Knives.....dis 20 @ 25  
Ames' Bread Knives.....dis 20 @ 25  
Moran's Shoe and Bread Knives.....dis 20 @ 25  
Hay and Straw.....dis 20 @ 25  
Table and Pocket.....dis 20 @ 25

**Knobs.**

Door Mineral.....dis 65 @ 68  
Door Por. Jar'd.....dis 75 @ 78  
Door Por. Jar'd Nickel.....dis 75 @ 78  
Door Por. Jar'd Nickel.....dis 75 @ 78  
Drawer, Porcelain.....dis 10 @ 10.5  
Hemlock Door Knob, new list.....dis 40.10 @ 40.10  
Yale & Towne Wood Knobs, list Dec., 1885.....dis 40  
Furniture Plain.....dis 75 @ 75.50  
Furniture, Wood Screws.....dis 25.10  
Base, Rubber Top.....dis 70.10 @ 70.10  
Picture, Judd's.....dis 60.10 @ 60.10  
Picture, Sargent's.....dis 60.10 @ 60.10  
Picture, Hemlock.....dis 35.10 @ 35.10  
Shutter, Porcelain.....dis 65.10 @ 65.10  
Carriage, Japaned.....dis 80.10 @ 80.10

**Ladies.**  
Melting, Sargent's.....dis 55.10 @ 55.10  
Melting, Reading.....dis 55.10 @ 55.10  
Melting, Monroe's Patent.....dis 55.10 @ 55.10  
Melting, P. S. & W.....dis 55.10 @ 55.10  
Melting, Warner's.....dis 55.10 @ 55.10

**Lawn Mowers.**

Standard List.....dis 50.10 @ 50.10  
Enterprise.....dis 60.10 @ 60.10

**Lathes.**

Rotular, Plain with Guards.....dis 40.10 @ 42.25  
Rotular, Lift Wire, with Guards.....dis 40.10 @ 42.25  
Rotular, Square Plain, with Guards.....dis 40.10 @ 42.25  
Rotular, Sq. Lift Wire with Guards.....dis 40.10 @ 42.25  
Without Guards, 2 1/2" & 3" down less.  
Police, Small, \$5.00; Med. \$7.25; Large, \$9.75, dis 20 @ 25

**Lemon Squeezers.**

Porcelain Lined, No. 1.....dis 50.00, dis 25 @ 30  
Wood, No. 2.....dis 50.00, dis 25 @ 30  
Wood, Common.....dis 50.00, dis 25 @ 30  
Dunlap's Improved.....dis 37.75, dis 20  
Jamms'.....No. 1, \$1.00; No. 2, \$1.10; No. 3, \$1.20  
Jennings' "Star".....dis 25.50  
The "Boss".....dis 25.50  
Dean's.....Nos. 1, \$1.00; No. 2, \$1.10; No. 3, \$1.20  
Little Giant.....dis 50.00 @ 50.50  
King.....dis 40.50 @ 40.50

**Lines.**

Cotton and Linen Fish, Draper's.....dis 60  
Draper's Chalk.....dis 60  
Draper's Mason's Linen, 34 ft., No. 1, \$1.25; No. 2, \$1.75; No. 3, \$2.25; No. 4, \$2.75; No. 5, \$3.25, dis 25  
Cotton Chalk.....dis 55  
Samson, Cotton, No. 1, \$1.00; No. 4, \$2.50, dis 10  
Silver Lake, Braided, No. 0, \$0.50; No. 1, \$0.50; No. 2, \$0.50; No. 3, \$0.50; No. 4, \$0.50; No. 5, \$0.50, dis 25  
Mason's Linen, No. 3, \$1.50; No. 4, \$2.00; No. 5, \$2.50, dis 25  
Mason's Colored Cotton.....dis 45  
Wire Clothes, No. 18, \$3.00; No. 19, \$3.00; No. 20, \$3.00  
Ventilator Cord, 1/2" unison Braided, White or Drab  
Cotton.....dis 75.50 @ 75.50

**Locks, Padlocks, Cabinet Locks, &c.**

**Door Locks, catches, &c.**  
List Dec. 30, 1886, chgd Feb. 2, 87.....dis 50.10 @ 60.25  
Note.—Lower net prices often made.  
Sargent & Co. list Feb. 1, 1888.....dis 50.10 @ 60.25  
Reading Hardware Co. list Feb. 2, 1888, dis 50.10 @ 60.25  
Livingston & Co.....dis 70  
Perkins' Burglar Proof.....dis 33.5 @ 40  
F. Many's "Extension Cylinder".....dis 10.50 @ 10.50  
Barnes Mfg. Co.....dis 40  
Yale Corrugated Key.....dis 33.5  
Yale Flat Key.....dis 30  
L. & C. Round Key Latches.....dis 30.10  
L. & C. Flat Key Latches.....dis 33.5 @ 40  
Romer's Night Latches.....dis 15  
Yale new list.....dis 33.5  
"Shepherd" or "U. S.".....dis 35  
"Weller" or "American".....dis 40.10 @ 40.10  
Sed's N. Y. Hasp Lock.....dis 25

**Cabinets.**

Eagle, Gaylord Parker and } List March, '84, revised  
Corbin.....dis 33.5 @ 40  
Deits, Nos. 36 to 39.....dis 40  
Deits, Nos. 51 to 63.....dis 40 @ 40.10  
Deits, Nos. 86 to 90.....dis 30  
Stoddard Lock Co.....dis 30 @ 33.5  
Champion Night Latches.....dis 40  
Barnes Mfg. Co.....dis 40  
Eagle and Corbin Frunk.....dis 35.25  
Champion "Cabinet and Combination".....dis 33.5  
Yale.....dis 33.5  
Romer's.....dis 33.5

**Adlocks.**

List, Dec. 23, 84.....dis 65.10 @ 65.25  
Yale Lock Mfg. Co. s.....dis 33.5  
Eagle.....dis 33.5  
Barnes Lock Co.....dis 40.25  
Romer's, Nos. 0 to 91.....dis 40  
Romer's Scandinavian, &c, Nos. 100 to 505.....dis 15  
A. E. Deits.....dis 40  
"Champion" Padlocks.....dis 40  
Hotchkiss.....dis 30  
"Star".....dis 45  
"Horse Shoe".....dis 40  
Barnes Mfg. Co.....dis 40  
Nock's.....dis 30  
Brown's Patent.....dis 25  
Scandinavian.....dis 60  
Fram's Pat. Scandinavian new list (low).....dis 60

**Lumber Tools.**

Ring Peaves, "Blue Line" Finish.....dis 18.00  
Ring Peaves, Common Finish.....dis 18.00  
Steel Socket Peaves.....dis 18.00  
Wall, Iron Socket Peaves.....dis 18.00  
Cant Hooks, "Blue Line" Finish.....dis 18.00  
Cant Hooks, Common Finish.....dis 18.00  
Cant Hooks, Mail, Socket Clasp, "Blue Line" Finish.....dis 18.00  
Cant Hooks, Mail, Socket Clasp, Common Finish.....dis 18.00  
Cant Hooks, Clip Clasp, "Blue Line" Fin.....dis 18.00  
Cant Hooks, Clip Clasp, Common Finish.....dis 18.00  
Saw Spikes.....dis 6 ft., 15 ft., 18 ft., 20 ft., 22 ft.  
Pike Poles, Pike & Hook, 12 ft., 14 ft., 16 ft., 18 ft., 20 ft., 22 ft.  
Pike Poles, Pike only, 11.50 12.50 14.50 16.50 17.50 21.50  
dis 10.00 11.00 13.00 15.00 16.00 20.00  
Pike Poles not ironed, 6.00 7.00 9.00 12.00 16.00  
setting Poles, dis 14.00 15.00 17.00  
wamp Hooks.....dis 18.00  
Landing Blocks.....dis 22.50  
Shedding Tongs.....dis 51.00  
Log Binders.....dis 22.00  
Sanded Boot Calks, 1 to 5 M, dis 25; 5 to 10 M, dis 30  
Square Steel Boot Calks.....dis 40  
Chain Rafter Dogs.....dis 100 @ 115.50  
Ring Rafter Dogs.....dis 100 @ 115.50  
Timber Grapples.....dis 40 @ 30.00

**Lustre.**

Four-ounce Bottles.....dis 1.75 @ 1.75 @ 37.00

**Wallets.**

Hickory.....dis 20.10 @ 20.10 @ 10.10  
Ironvite.....dis 20.10 @ 20.10 @ 10.10  
B. & L. Block Co., Hickory and L. V.....dis 30 @ 30.10

**Match Safes.**

Dangerfield's Self-Igniting.....dis 12.25  
Mattocks.—Regular list.....dis 60.5 @ 60.10

**Meat Cutters.**

Otkon's—Nos. 1, 2, 3, 4.....dis 14.00 17.00 20.00 25.00  
Woodruff's.....dis 14.00 17.00 20.00 25.00  
Crampin.....dis 200 300 400  
Hales' Pattern Nos. 11, 12, 13.....dis 37.00 38.00 45.00  
American.....dis 70  
Nos.....dis 70  
Each.....dis 70  
Enterprise.....dis 70  
Nos.....dis 70  
Each.....dis 70

Pennsylvania.....	dis 40&10%
Nos. 1.....	1 2 3 4
dos.....	\$24.00 28.00 34.00 28.00
Miles' Challenge, Nos. 1.....	dis 40&10%
Home No. 1.....	dis 40&10%
Draw Cut, Nos. 1.....	dis 40&10%
Each.....	dis 40&10%
Beef Shavers (Enterprise Mfg. Co.).....	dis 20&10%
Chadborn's Smoked Beef Cutter.....	dis 40&10%

<b>Mining Knives.</b>	
Am. (ad quality), 7 gro, 1 blade, 77; 2 blades, 112; 3 blades, 118.....	net
Lothrop's.....	dis 20&10%
Smith's, 7 dos, Single, \$5.00; Double, \$5.....	dis 40&10%
Knapp & Cowles.....	dis 50&10%
Buffalo Adjustable.....	dis 25%

<b>Measurers Gates.</b> —Stebbins' Pat. dis 70&10%	7 1/2
Stebbins' Gen'l.....	dis 40&10%
Stebbins' Tinned Ends.....	dis 40&10%
Chase's Hard Metal.....	dis 50&10%
Brush's.....	dis 20%
Lincoln's Pattern.....	dis 60&10%
Wood's.....	dis 20&10%

<b>Sees Nos. 1 2 3 4</b>	
7.00 8.00 9.00 10.00	dis 60&10%

<b>Money Drawers.</b> —7 dos, \$18 @ \$20.	
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<b>Muzzles.</b> —Safety, 7 dos, \$3.....	dis 25%
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<b>Nails.</b> —See Trade Report	
Wire Nails & Brads, list July 14, '87, dis 70&10%	
Wire Nails, Standard Penny.....	dis 20&10%

<b>Nail Puller.</b> —Curtiss Hammer.....	dis 20&10%
Giant, No. 1.....	dis 20&10%
Pelican.....	dis 20&10%
Boss.....	dis 20&10%

<b>Nail Sets.</b> —Square.....	dis 20&10%
Round.....	dis 20&10%
Cannon's Diamond Point.....	dis 20&10%

<b>Nut Crackers.</b>	
Table (Hudson & Beckley Mfg. Co.).....	dis 40%
Blake's Rattler.....	dis 20&10%
Turner & Seymour Mfg. Co.....	dis 50%

<b>Nuts.</b>	
Nuts, all kinds, 5¢ off list Jan. 1, 1888.	
In lots less than 100 lb, 7¢, add 1/2¢, 1 lb boxes add 1¢	

<b>Oaks.</b>	
Government.....	dis 84¢
U. S. Navy.....	dis 7¢
Navy.....	dis 64¢

<b>Oilers.</b> —Zinc and Tin.....	dis 65¢
Brass and Copper.....	dis 60&10%
Walleable, Hammers, Improved, No. 1, \$3.00; No. 2, \$4.00; No. 3, \$4.50.....	dis 10&10%

<b>Packing, Steam.</b>	
Standard.....	dis 60&10%
Extra.....	dis 60&10%
N. Y. R. & P. Co., Standard.....	dis 60&10%
N. Y. R. & P. Co., Empire.....	dis 70%
N. Y. R. & P. Co., Salamander.....	dis 80%
Jenkins' Standard.....	dis 85%

<b>Miscellaneous.</b>	
American Packing.....	dis 10¢
Russia Packing.....	dis 14¢
Italian Packing.....	dis 13¢
Cotton Packing.....	dis 15¢
Jute.....	dis 7¢

<b>Padlocks.</b> —See Locks.	
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<b>Pails.</b>	
Galvanized Iron.....	dis 10¢
Quarts.....	dis 12¢
Bill's Light Weight, 7 dos.....	dis 3.75
Bill's Heavy Weight, 7 dos.....	dis 3.00
Whiting's.....	dis 2.75
Sidney Shepard & Co.....	dis 2.87
Iron Clad.....	dis 2.75
Fire Buckets.....	dis 2.75

<b>Indurated Wire Ware.</b>	
Star Pails, 12 qt.....	dis 24.50
Fire, Stable and Milk, 14 qt.....	dis 25.50

<b>Pencils.</b> —Faber's Carpenters.....	dis 50%
Faber's Round Gilt.....	dis 50%
Dixon's Lead.....	dis 45.00
Dixon's Carpenters.....	dis 40&10%

<b>Picks.</b>	
Railroad, 6 to 6, \$12.00; 6 to 7, \$13.....	dis 60%
Adze eye, 6 to 6, \$12.00; 6 to 7, \$13.....	dis 60%

<b>Picture Nails.</b>	
Brass Head, Sargent's list.....	dis 50&10%
Brass Head, Combination list.....	dis 50&10%
Porcelain Head, Sargent's list.....	dis 50&10%
Porcelain Head, Combination list.....	dis 50&10%
Niles' Patent.....	dis 40%

<b>Pinking Irons.</b> .....	dis 65¢
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<b>Pipe, Wrought Iron.</b> —List March 23, 1887.	
14 and under, Plain.....	dis 55%
14 and under, Galvanized.....	dis 47 1/2%
14 and over, Plain.....	dis 65%
14 and over, Galvanized.....	dis 52 1/2%
Boiler tubes, iron.....	dis 55%

<b>Planes and Plane Irons.</b>	
Molding.....	dis 50%
Bench, First Quality.....	dis 60&10%
Bench, Second Quality.....	dis 60&10%
Bailey's (Stanley R. & L. Co.).....	dis 30&10%

<b>Iron Planes.</b>	
Bailey's (Stanley R. & L. Co.).....	dis 30&10%
Miscellaneous Planes (Stanley R. & L. Co.).....	dis 20&10%
Victor Planes (Stanley R. & L. Co.).....	dis 20&10%
Steer's Iron Planes.....	dis 35%
Meriden Mal. Iron Co.'s.....	dis 30&10%
Davis's Iron Planes.....	dis 30&10%
Birmingham Plane Co.....	dis 30&10%
Gage Tool Co.'s Self-Setting.....	dis 2 1/2%

<b>Plane Irons.</b>	
Plane Irons, Butcher's.....	dis 20&10%
Plane Irons, Buck Bros.....	dis 30%
Plane Irons, Auburn Tool Co., "Thistle".....	dis 40%
Plane Irons, Middlesex Mfg. Co., "Baldwin".....	dis 30%
Single and Cut.....	dis 33 1/2%
Double.....	dis 33 1/2%
L. & J. White.....	dis 35%

<b>Pliers and Nippers.</b>	
Butter's Patent.....	dis 30&10%
Hall's Pat. Compound Lever Cutting Nippers, No. 2, 5 in., \$13.50; No. 4, 7 in., \$21.00.....	dis 30&10%
Hudson & Beckley Mfg. Co.....	dis 50&10%

<b>Gas Pliers.</b> .....	dis 60%
Gas Pliers, Custer's Nickel Plated.....	dis 60&5%
Kureka Pliers and Nippers.....	dis 40%
Russell's Parallel.....	dis 25%
P. S. & W. Cast Steel.....	dis 50%
P. S. & W. Tinner's Cutting Nippers.....	dis 10%
Carew's Pat. Wire Cutters.....	dis 20%
Morrill's Parallel, per dos.....	dis 30&5%
Cronk's 8 in., \$15; 10 in., \$21.....	dis 40%

<b>Plumbers and Levels.</b>	
Regular List.....	dis 70&10%
Disston's.....	dis 45&10%
Pocket Level.....	dis 70&10%
Davis Iron Levels.....	dis 30%
Davis' Inclination.....	dis 10&10%

<b>Peppers, Corn.</b>	
Round or Square, 1 qt.....	dis 10.50
Round or Square, 2 qt.....	dis 22.50

<b>Post Hole and Tree Augers and Diggers.</b>	
Sargent's Post Hole Digger.....	dis 35.00
Fletcher Post Hole Augers.....	dis 35.00
Eureka Diggers.....	dis 11&17
Leed's.....	dis 8.00
Vaughan's Post Hole Auger, per dos.....	dis 13.00
Kohler's Little Giant.....	dis 18.00
Kohler's Hercules.....	dis 15.00
Kohler's New Champion.....	dis 20.00
Schneider.....	dis 18
Ryan's Post Hole Diggers.....	dis 24
Cronk's Post Bars.....	dis 50&50
Gibb's Post Hole Digger.....	dis 40&40

<b>Potato Parers.</b>	
White Mountain.....	dis 5.00
Antrim Combination.....	dis 48.00
Hoceler.....	dis 13.50

<b>Pruning Hooks and Shears.</b>	
Disston's Combined Pruning Hook and Saw.....	dis 20&10%
E. S. Lee & Co.'s Pruning Tools.....	dis 40%
Pruning Shears, Henry's Pat.....	dis 3.75
Henry's Pruning Shears.....	dis 4.50
Wheeler, M. & Co.'s Combination.....	dis 12
Dunlap's Saw and Chisel.....	dis 3.50
J. Mallinson & Co.....	dis 3.25

<b>Pulleys.</b> —Hot House, Awning, &c.....	dis 60&10%
Japanned Screw.....	dis 60&10%
Brass Screw.....	dis 60&10%
Japanned Side.....	dis 60&10%
Japanned Line.....	dis 55%
Empire Sash Pulley.....	dis 50&10%
Hay Fork, Solid Eye, \$4.00; Swivel, \$4.50.....	dis 50&10%
Hay Fork, "Anti-Friction," 5 in. Solid, \$5.70.....	dis 50%
Hay Fork, "F" Common and Pat. Bushed.....	dis 30%
Hay Fork, Tarbo's Pat. Iron.....	dis 30%
Hay Fork, Reed's Self-Lubricating.....	dis 45%
Shade Rack.....	dis 45%
Tackle Blocks.....	dis 45%

<b>Pumps.</b> —Clister, Best Makers.....	dis 10&10%
Pitcher Spout, Best Makers.....	dis 10&10%
Pitcher Spout, Cheaper Goods.....	dis 70&10%

<b>Punches.</b>	
Saddlers' or Drive, good quality.....	dis 60¢
Bemis & Call Co.'s Cast Steel Bit.....	dis 50&5%
Bemis & Call Co.'s Springfield Socket.....	dis 40&5%
Spring, good quality.....	dis 2.50
Spring, Leach's Patent.....	dis 15%
Bemis & Call Co.'s Spring and Check.....	dis 40%
Solid Timmer.....	dis 1.44
Tinner's Hollow Punches.....	dis 30%
Rice Hand Punches.....	dis 15%

<b>Rail.</b>	
Sliding Door, Wrt. Brass.....	dis 15%
Sliding Door, Bronze.....	dis 15%
Sliding Door, Iron, Painted.....	dis 15%
Sliding Door, Light.....	dis 15%
Per 100 feet.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%

<b>Rails.</b>	
Per 100 feet.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%

<b>Rails.</b>	
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Per 100 feet.....	dis 15%
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Med. Large.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%

<b>Rails.</b>	
Per 100 feet.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%

<b>Rails.</b>	
Per 100 feet.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%

<b>Rails.</b>	
Per 100 feet.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%

<b>Rails.</b>	
Per 100 feet.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%

<b>Rails.</b>	
Per 100 feet.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%

<b>Rails.</b>	
Per 100 feet.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%

<b>Rails.</b>	
Per 100 feet.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%

<b>Rails.</b>	
Per 100 feet.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%

<b>Rails.</b>	
Per 100 feet.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%

<b>Rails.</b>	
Per 100 feet.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis 15%

<b>Rails.</b>	
Per 100 feet.....	dis 15%
Small.....	dis 15%
Med. Large.....	dis



Syracuse Screw-Drive Bits.....dis 30 & 30.5 &  
Screw Driver Bits.....dis 50 & 75 &  
Screw Driver Bits, Parr's.....dis 50 &  
Fray's Co. Hdl. Sets, No. 3, 112.....dis 25 & 25 & 10 &  
P. D. & Co., all Steel.....dis 50 &

**Screws.**  
Wood Screws—List, Brass, Jan. 27; Iron, July 1, 1887  
Flat Head Iron.....dis 10 &  
Round Head Iron.....dis 45 &  
Flat Head Brass.....dis 65 &  
Round Head Brass.....dis 60 &  
Flat Head Bronze.....dis 65 &  
Round Head Bronze.....dis 60 &

**Nails.**  
Flat Head, Iron.....dis 55 &  
Round Head, Iron.....dis 50 &  
**Bench and Hand.**  
Bench, Iron.....dis 55 & 10 & 55 & 10 & 10 &  
Bench, Wood, Beech.....dis 22 &  
Bench, Wood, Hickory.....dis 20 & 10 &  
Hand, Wood.....dis 25 & 10 & 25 & 10 &  
Lag, Blunt Point.....dis 70 &  
Coach and Lag, Gimlet Point.....dis 60 & 60 & 25 &  
Bed.....dis 25 &  
Hand Rail, Sargent's.....dis 60 & 20 &  
Hand Rail, Burman, Beckley & Co., dis 70 & 10 &  
Hand Rail, Am. Screw Co., dis 75 &  
Jack Screws, Millers Falls list.....dis 50 & 50 & 5 &  
Jack Screws, P. S. & W.....dis 35 &  
Jack Screws, Sargent.....dis 60 & 10 & 60 & 10 &  
Jack Screws, Stearns.....dis 40 & 40 & 10 &

**Scroll Saws.**  
Lester, complete, \$10.00.....dis 25 &  
Rogers, complete, \$4.00.....dis 25 &  
**Scribe Spades.**.....dis 50 & 10 &

**Shears.**  
American Cast Iron.....dis 75 & 10 & 75 & 10 & 5 &  
Pruning.....See Pruning Hooks and Shears  
Barnard's Lamp Trimmers.....dis 37 &  
Tinners'.....dis 20 &  
Seymour's, List, Dec. 1881, dis 60 & 10 & 60 & 10 & 5 &  
Heinrich's, List, Dec. 1881, dis 60 & 10 & 60 & 10 & 5 &  
Heinrich's Tailor's Shears.....dis 35 &  
First quality C. S. Trimmers.....dis 80 & 10 &  
Second quality C. S. Trimmers.....dis 80 & 10 &  
Acme Cast Shears.....dis 10 & 10 &  
Diamond Cast Shears.....dis 10 &  
Clippers.....dis 10 & 10 &  
Victor Cast Shears.....dis 75 & 10 & 75 & 10 & 5 &  
Crown Bros. & Hubber, Solid Forged Steel.....dis 40 &  
Cleveland Machine Co., Solid Steel Forged.....dis 70 &

**Shovels.**  
**Sliding Door.**  
M. W. & Co., List Jan. 1, 1887.....dis 50 & 10 & 60 & 5 &  
R. & E. list Dec. 18, 1885.....dis 55 & 2 &  
Corbin's list.....dis 60 & 10 & 2 &  
Patent Roller.....dis 60 & 10 & 2 &  
Patent Roller, Hadfield's.....dis 75 &  
Russell's Anti-Friction, list Dec. 18, 1885.....dis 60 &  
Moore's Anti-Friction.....dis 60 &

**Sliding Shutter.**  
R. & E. list Dec. 18, 1885.....dis 60 & 10 & 2 &  
Sargent's list.....dis 60 & 10 &  
Reading list.....dis 60 & 10 &

**Ship Tools.**  
L. & J. White.....dis 25 &  
Albertson Mfg. Co.....dis 25 &

**Shoes, Horse, Mule, &c.**  
Burden's, Perkins', Phoenix, at factory.....\$4.00  
Mule—Add \$1 per keg to above prices.  
Ox, Wrought—

1000 lbs.....dis 9 &  
500 lbs.....dis 9 &  
500 lbs.....dis 9 &

**Shot.**—Eastern prices, 25 off, cash, 5 days.  
Drop, # bag, 25 lb.....\$1.50  
Drop, # bag, 5 lb......35  
Drop, # bag, 1 lb......175  
Suck and Chilled, # 25-lb bag.....\$1.75  
Suck and Chilled, # 5-lb bag......40

**Shovels and Spades.**  
Ames' Shovels, Spades, &c., list Nov. 1, 1885.....dis 20 &  
Note.—Jobbers frequently give 5 & 7 & extra on above.

Griffith's Black Iron.....dis 50 & 10 &  
Griffith's C. B.....dis 60 & 10 &  
Griffith's Solid Cast Steel R. R. Goods.....dis 20 &  
Old Colony (Sanford Fork & Tool Co.).....dis 20 &  
St. Louis Shovel Co.....dis 15 & 15 & 7 &  
Hussey, Binn & Co.....dis 15 & 25 &  
Hubbard & Co.....dis 20 & 25 &  
Lehigh Mfg. Co.....dis 50 &  
Payne Pettibone & Son, list January, 1886.....dis 30 &  
Remington's (Lowman's Patent).....dis 30 & 10 &  
Rowland's, Black Iron.....dis 50 & 10 &  
Rowland's Steel.....dis 60 & 5 & 60 & 10 &

**Shovels and Tongs.**  
Iron Head.....dis 60 & 10 & 60 & 10 & 5 &  
Brass Head.....dis 60 & 10 & 10 &

**Skins, Thimble.**  
Western list.....dis 75 & 5 & 75 & 10 &  
Columbia Wrt. Steel, list Nov. 1, 1887.....dis 20 &  
Coldbrookdale Iron Co.....dis 50 & 10 &

**Sieves.**  
Buffalo Metallic, S. S. & Co., new list.....dis 50 & 25 & 10 &  
Barier Flour Sifters.....dis 22 &  
Smith's Adjustable Sifters.....dis 22 &  
Smith's Adjustable Sifters.....dis 22 &  
Smith's Adjustable F. & C. Strainer.....dis 17 &  
Sieves, Wooden, Am.....dis 17 &  
Mesh 18, Nested, # dos.....70 &  
Mesh 20, Nested, # dos.....85 &  
Mesh 24, Nested, # dos.....1.00  
Sieves.—School, by case.....dis 50 & 10 &

**Snaps, Harness, &c.**  
Anchor T. & S. Mfg. Co.....dis 60 &  
Fitch's (Bristol).....dis 60 & 10 &  
Hotchkiss.....dis 60 &  
Andrews.....dis 60 &  
Sargent's Patent Guarded.....dis 70 & 10 & 10 &  
German, new list.....dis 40 & 10 &  
Covert, New Patent.....dis 50 & 5 &  
Covert New R. E.....dis 60 & 2 &  
Covered Spring.....dis 60 & 10 & 10 &

**Soldering Irons.**  
Covert's Adjustable, list Jan. 1, 1886.....dis 35 & 2 &  
**Spoke Shaves.**—Iron.....dis 45 &  
Wood.....dis 30 &  
Bailey's (Stanley R. & L. Co.).....dis 40 & 10 &  
Stearns.....dis 20 & 10 & 30 &

**Spoke Trimmers.**  
Bonney's.....dis 10 & 10 &  
Stearns'.....dis 20 & 10 &  
Ives'.....dis 50 & 10 &  
Douglans.....dis 20 & 10 &

**Spoons and Forks.**  
**Tinned Iron.**  
Basting, Central Stamping Co's list, dis 70 & 70 & 10 &  
Solid Table and Tea, Central Stamping Company's  
list.....dis 70 & 70 & 10 &  
Buffalo, S. S. & Co.....dis 35 & 2 &  
Silver-Plated—4 mos. or 5 % cash 31 days.  
Meriden Hrt. Co., Rogers.....dis 50 &  
C. Rogers & Bros.....dis 50 &  
Rogers & Bros.....dis 50 &  
Reed & Barton.....dis 50 &  
Wm. Rogers Mfg. Co.....dis 50 & 50 & 10 &  
Wm. Rogers Mfg. Co.....dis 50 & 50 & 10 &  
Holmes & Edwards Silver Co.....dis 50 & 50 & 10 &

H. & E. Silver Co. Mexican Silver.....dis 50 & 5 &  
H. & E. Silver Co. Durham Silver.....dis 50 & 5 &  
German Silver.....dis 50 & 50 & 5 &  
German Silver, Hall & Elton.....dis 40 & 5 &  
Nickel Silver.....dis 50 & 50 & 10 & 5 &, cash  
Britannia.....dis 55 &

**Springs.**  
Elliptic, Concord, Platform and Half Scroll.....dis 60 & 60 & 5 &  
Cliff's Bolster Springs.....dis 25 &

**Squares.**  
Steel and Iron.....dis 70 & 70 & 10 &  
Nickel-Plated.....dis 70 & 70 & 10 &  
Try Square and T Bevels.....dis 60 & 10 & 10 & 70 &  
Diston's Try Square and T Bevels.....dis 45 & 10 &  
Winterbottom's Try and Miter.....dis 30 & 10 &

**Staples.**  
Fence Staples, Galvanized } Same price as Barb Wire.  
Fence Staples, Plain } See Trade Report.

**Steelwires.**  
Blacksmith's, Waterford Goods.....dis 30 & 5 & 30 & 10 &  
Lightning Screw Plates.....dis 25 & 30 &  
Reece's New Screw Plates.....dis 33 & 33 & 5 &

**Stones.**  
Hindostan No. 1, 3; Aze, 5; Slips No. 1, 5.....dis 25 &  
Sand Stone.....dis 15 &  
Washita Stone, Extra.....dis 15 &  
Washita Stone, No. 1.....dis 15 &  
Washita Stone, No. 2.....dis 11 &  
Washita Stone, No. 3.....dis 11 &  
Washita Stone, No. 4.....dis 11 &  
Washita Stone, No. 5.....dis 11 &  
Arkansas Stone, No. 1, 4 to 6 in.....dis 1.35 &  
Arkansas Stone, No. 1, 6 to 9 in.....dis 1.75 &  
Turkey Oil Stone.....dis 4 to 8 in.....dis 1.00 &  
Lake Superior Stone.....dis 1.10 &  
Lake Superior Stone.....dis 1.10 &  
Seneca Stone, Red Paper Brand.....dis 18 & 20 &  
Seneca Stone, High Rounds.....dis 20 & 25 &  
Seneca Stone, Small Whets, # gro.....\$24.00

**Stove Polish.**  
Joseph Dixon's.....dis 10 &  
Gem.....dis 10 &  
Gold Medal.....dis 10 &  
"Mirror".....dis 10 &  
Lustro.....dis 10 &  
Raby.....dis 10 &  
Rising Sun, # gro, lots.....dis 10 &  
Boyrnton's Noon Day.....dis 10 &  
Parlor Pride Stove Enamel.....dis 10 &  
Yates' Liquid.....dis 10 &  
Yates' Standard Paste Polish, 10-lb cans, per lb., 15 &  
Jet Black.....dis 10 &  
Japanese.....dis 10 &  
Firestone.....dis 10 &  
Diamond O. K. Enamel.....dis 10 &

**Tacks, Brads, &c.**  
List Jan. 2, 1888.  
American Iron Carpet Tacks.....dis 72 & 10 & 2 &  
Steel Carpet Tacks.....dis 72 & 10 & 2 &  
Swedes Iron Carpet Tacks.....dis 72 & 10 & 2 &  
American Iron Cut Tacks.....dis 72 & 10 & 2 &  
Swedes Iron Cut Tacks.....dis 72 & 10 & 2 &  
Swedes Iron Upholsterers' Tacks.....dis 67 & 10 & 2 &  
Tinned Swedes Iron Tacks.....dis 67 & 10 & 2 &  
Tinned Swedes Iron Upholsterers' Tacks.....dis 67 & 10 & 2 &  
Gimp and Lace Tacks.....dis 67 & 10 & 2 &  
Tinned Gimp and Lace Tacks.....dis 67 & 10 & 2 &  
Swedes Iron Trimmers' Tacks.....dis 67 & 10 & 2 &  
Swedes Iron Miners' Tacks.....dis 67 & 10 & 2 &  
Swedes Iron Bill Posters' or Railroad Tacks.....dis 67 & 10 & 2 &  
Swedes Steel Tacks, all kinds (Swedes Iron price)  
Copper Tacks.....dis 72 & 10 & 2 &  
Copper Finishing Trunk and Clout Nails.....dis 33 & 10 & 2 &

**Finishing Nails.**.....dis 60 & 10 & 2 &  
Trunk and Clout Nails.....dis 60 & 10 & 2 &  
Picture-Frame Nails.....dis 60 & 10 & 2 &  
Basket Nails.....dis 60 & 10 & 2 &  
Common and Patent Brads.....dis 60 & 10 & 2 &  
Hungarian Nails.....dis 60 & 10 & 2 &  
Chair Nails.....dis 60 & 10 & 2 &  
Zinc Glaziers' Points.....dis 40 & 10 & 2 &  
Cigar Box Nails.....dis 45 & 10 & 2 &  
Picture-Frame Points.....dis 45 & 10 & 2 &  
Looking-glass Tacks.....dis 45 & 10 & 2 &  
Leathered Carpet Tacks.....dis 45 & 10 & 2 &  
Brush Tacks.....dis 45 & 10 & 2 &  
Shoe Finders.....dis 45 & 10 & 2 &  
Lining and Saddle Nails, list Jan. 1, 1886:  
Japanned.....dis 30 & 10 & 10 &  
Double-pointed Tacks.....dis 20 & 10 & 10 &  
Wire Carpet Nails.....dis 50 & 10 &  
Wire Brads and Nails.....See Nails, Wire  
Steel Wire Brads, R. & E. Mfg. Co's list.....dis 50 & 10 &

**Tap Borers.**  
Common and Ring.....dis 20 & 10 &  
Ives' Tap Borers.....dis 33 & 5 &  
Enterprise Mfg. Co.....dis 10 & 30 &  
Clark's.....dis 33 &  
**Tapes, Measuring.**—American.....dis 25 & 10 &  
Spring.....dis 25 &  
Chesterman's.....Regular list dis 25 & 30 &  
**Thermometers.**—Tin Case.....dis 30 & 10 &  
Thermometer Scales.—See Scales.  
**Tier Bails.**  
Steel Wire, Standard list.....dis 50 & 10 & 5 &  
**Tinners' Shears, &c.**  
Shears and Snips (P. S. & W.).....dis 20 & 25 &  
Punches—See Punches.  
Snips, J. Mailson & Co.....dis 33 &

**Tire Benders, Upsetters, &c.**  
Stoddard's Lightning Tire Upsetters.....dis 15 &  
Detroit Perfected Tire Bender.....dis 15 &  
Enterprise Mfg. Co. (Champion).....dis 20 & 10 &  
Wood Bottom.....dis 20 & 10 &  
All Iron.....dis 20 & 10 &  
Nashua Lock Co's.....dis 18.00, dis 50 & 55 &  
Wilson's.....dis 55 &  
Clippers (Sargent & Co.).....dis 20 &  
Cm.....dis 20 &

**Transom Lifter.**  
Wellensak's Patent Iron Bronzed.....dis 50 &  
Reither's Patent Iron Rods list Jan. 1, 1887, dis 50 & 2 &  
Reither's Real Bronze or Nickel Plate, list Jan. 1, 1887.....dis 50 & 2 &  
Excel.....dis 50 &  
Shaw's.....dis 50 &  
Payson's Universal.....dis 40 & 40 & 10 &  
Crown and Star.....dis 60 &

**Traps.**  
Game.....dis 25 & 40 & 5 &  
Newhouse.....dis 25 & 40 & 5 &  
Oneida Pattern.....dis 60 & 10 & 10 &  
Game, Blake's Patent.....dis 40 & 10 & 5 &  
**Mouse and Rat.**  
Mouse, Wood, Choker.....dis 11 & 12 &  
Mouse, Round Wire.....dis 11.50, dis 10 &  
Mouse, Cage, Wire.....dis 25.50, dis 15 &  
Mouse, Catch, em-silver.....dis 25.50, dis 15 &  
Mouse, "Bonanza".....dis 11.50, dis 10 &  
Mouse, Delusion.....dis 11.50, dis 10 &  
Rat, "Decoy".....dis 11.50, dis 10 &

Ideal.....dis 10 &  
Cyclone.....dis 10 &  
Hotchkiss Metallic Mouse, 5 hole trans.....dis 10 &  
In full cases.....dis 75 &

**Trowels.**  
Lothrop's Brick and Plastering.....dis 25 &  
Reed's Brick and Plastering.....dis 15 &  
Diston's Brick and Plastering.....dis 25 & 25 & 40 &  
Peace's Plastering.....dis 25 &  
Clement & Maynard's.....dis 20 &  
Rose's Brick.....dis 15 & 20 &  
Brace's Brick.....dis 25 &  
Worrall's Brick and Plastering.....dis 20 &  
Garden.....dis 70 &  
**Triers.**—Butter and Cheese.....dis 25 &

**Trucks, Warehouse, &c.**  
B. & L. Block Co's list, 1882.....dis 40 &  
**Tubes, Boiler.**—See Pipe

**Twine.**  
No. 9, Flax Twine, 4 and 5 Balls.....dis 25 &  
No. 12.....dis 21 &  
No. 18.....dis 18 &  
No. 24.....dis 16 &  
No. 36.....dis 16 &  
No. 264, Mattress, 4 and 5 Balls.....dis 48 & 50 &  
Chalk Line, Cotton, 4 Balls.....dis 25 &  
Mason Line, Linen.....dis 50 &  
3-Ply Hemp, 4 and 5 Balls (Spring Twine).....dis 11 &  
3-Ply Hemp, 1 1/2 Balls.....dis 12 &  
3-Ply Hemp, 1 1/2 Balls.....dis 11 &  
Cotton Wrapping, 5 Balls to a.....dis 10 &  
2, 3, 4 and 5 Ply Jute, 1/2 Balls.....dis 10 &  
Wool.....dis 10 &  
Paper.....dis 10 &  
Cotton Mops—6, 8, 12 and 15 to do.....dis 15 &

**Vases.**  
Fisher & Norris Double Screw.....dis 15 & 10 &  
Stephens'.....dis 25 & 30 &  
Parker's.....dis 20 & 25 &  
Howard's.....dis 40 &  
Bonney's.....dis 40 &  
Millers Falls.....dis 40 &  
Trenton.....dis 40 &  
Merriam's.....dis 15 &  
Sargent's.....dis 60 & 10 &  
Buckus and Union.....dis 40 &  
Double Screw 1-2.....dis 15 &  
Prentiss.....dis 30 & 5 &  
Simpson's Adjustable.....dis 40 &

**Saw Filers.**  
Bonney's, Nos. 2 & 3.....dis 15.00, dis 40 &  
Stearns'.....dis 33 & 10 & 33 & 10 & 10 &  
Stearns' Silent Saw Vises.....dis 33 & 10 &  
Sargent's.....dis 40 &  
Hopkins'.....dis 17.50, dis 10 &  
Reading.....dis 40 &  
Wentworth.....dis 20 &  
Combination Hand Vise.....dis 42.00  
Cowell Hand Vises.....dis 20 &  
Bauer's Pipe Vises.....dis 10 &

**Wagon Boxes.**  
Per lb.....24 &  
**Washer Cutters.**  
Smith's Patent.....dis 12.00, dis 40 & 10 &  
Johnson's.....dis 11.00, dis 33 &  
Penny's.....dis 11.4, Jap'd, 11.0, dis 50 &  
Appleton's.....dis 11.00, dis 40 &  
Bonney's.....dis 30 & 10 &

**Washers.**  
1/2 5-16 3/4 1/2 1/2 1/2 1/2 1/2  
In lots less than 100 lb, #, add 1/2, 1 lb boxes 1/2 to list.

**Wedges.**—Iron.....dis 3 &  
Steel.....dis 4 &  
**Well Buckets, Galvanized.**  
Hill's.....dis 12 qt., \$4.25; 14 qt., \$5.25  
Iron Clad.....dis 14 qt., \$4.25; 14 qt., \$4.50  
Whiting's Flat Iron Band.....dis 4.25; 14 qt., \$4.50  
Whiting's.....dis 4.00; 14 qt., \$4.25  
Well Wheels—5 in., \$2.25; 10 in., \$2.70; 12 in., \$3.25

**Wire.**  
Iron.....dis 75 & 75 & 5 &  
Market, Br. & Ann., Nos. 0 to 18.....dis 70 & 70 & 10 &  
Market, Galvanized, Nos. 0 to 18.....dis 65 & 10 &  
Market, Tinned, Nos. 0 to 18.....dis 67 & 10 & 7 &  
Stone Br. & Ann'd, Nos. 18 to 30.....dis 72 & 5 & 75 &  
Stone, Bright & Ann'd, Nos. 19 to 26, dis 75 & 10 &  
Stone, Br. & Ann'd, Nos. 27 to 36, dis 75 & 10 &  
Stone, Tinned, list, Nos. 18 to 36, dis 70 & 10 &  
Tinned Broom Wire, Nos. 18 to 24, dis 65 & 75 &  
Galvanized Fence.....dis 72 & 75 & 5 &  
Annealed Fence, Nos. 8 & 9.....dis 72 & 75 & 5 &  
Annealed Grade, Nos. 10 to 14.....dis 75 & 75 & 5 &  
Brass and Copper, list, Jan. 18, '84.....dis 15 & 20 &  
Barb Fence.....See Trade Report

Wire on Spools.....dis 65 &  
Mallin's Steel and Tinned Wire on Spools.....dis 40 &  
Mallin's Brass and Copper Wire on Spools.....dis 40 &  
Cast Steel Wire.....dis 50 &  
Stub's Steel Wire.....dis 50 &  
Steel Music Wire, Nos. 12 to 30.....dis 55 &  
Picture Wire.....dis 60 &  
Barb Wire Safety Fence.....dis 100 & 50 &, dis 70 &

**Wire Cloth, Netting, &c.**  
Painted Screen Cloth, No. 33, 100 sq ft.....\$1.90  
Painted Screen Cloth, No. 33, 100 sq ft.....\$1.90  
Galvanized Wire Netting.....dis 70 & 10 & 75 &  
**Wire Goods.**—See Bright Wire Goods.  
**Wire Rope.**—List May 1, 1886.....dis 45 &  
Adjustable.....dis 40 &  
Baxter's Adjustable "S".....dis 40 &  
Baxter's Diagonal.....dis 40 &  
Coe's Genuine.....dis 55 &  
Coe's "Mechanics".....dis 55 &  
Girard Standard.....dis 70 &  
Lamson & Sessions' Engineers'.....dis 70 &  
Lamson & Sessions' Standard.....dis 70 &  
Coe's Pattern, Wrought.....dis 80 & 80 & 5 &  
Girard Agricultural.....dis 80 &  
Lamson & Sessions' Agricultural.....dis 80 &  
Sterling Wrought.....dis 30 &  
Bemis & Call's Patent Combination.....dis 30 &  
Bemis & Call's Brigg's Pattern.....dis 25 &  
Bemis & Call's Cylinder or Gas Pipe.....dis 40 &  
Bemis & Call's No. 3 Pipe.....dis 35 &  
Allen's Pocket (Bright).....dis 40 &  
The Favorite Pocket (Bright).....dis 40 &  
Webster's Patent Combination.....dis 25 &  
Boardman's.....dis 2 &  
Always Ready.....dis 25 &  
Alligator.....dis 50 &  
Donohue's Engineer.....dis 25 &  
Asme. Bright.....dis 60 &  
Acme, Nickel.....dis 55 &  
Walker.....dis 40 &  
Diamond.....dis 40 &  
Diamond Patent Steel.....dis 40 &

**Wringers, Clothes.**  
List Jan. 10, 1888, \$3.00 off.

**Wrought Goods.**  
Staples Hooks, &c., list Jan. 12, '87, dis 80 & 20 & 50 & 25 &

